SPECIAL FLASH ISSUE

POPULAR PHOTOGRAPHY

America's leading photographic magazine

NOVEMBER, 1957

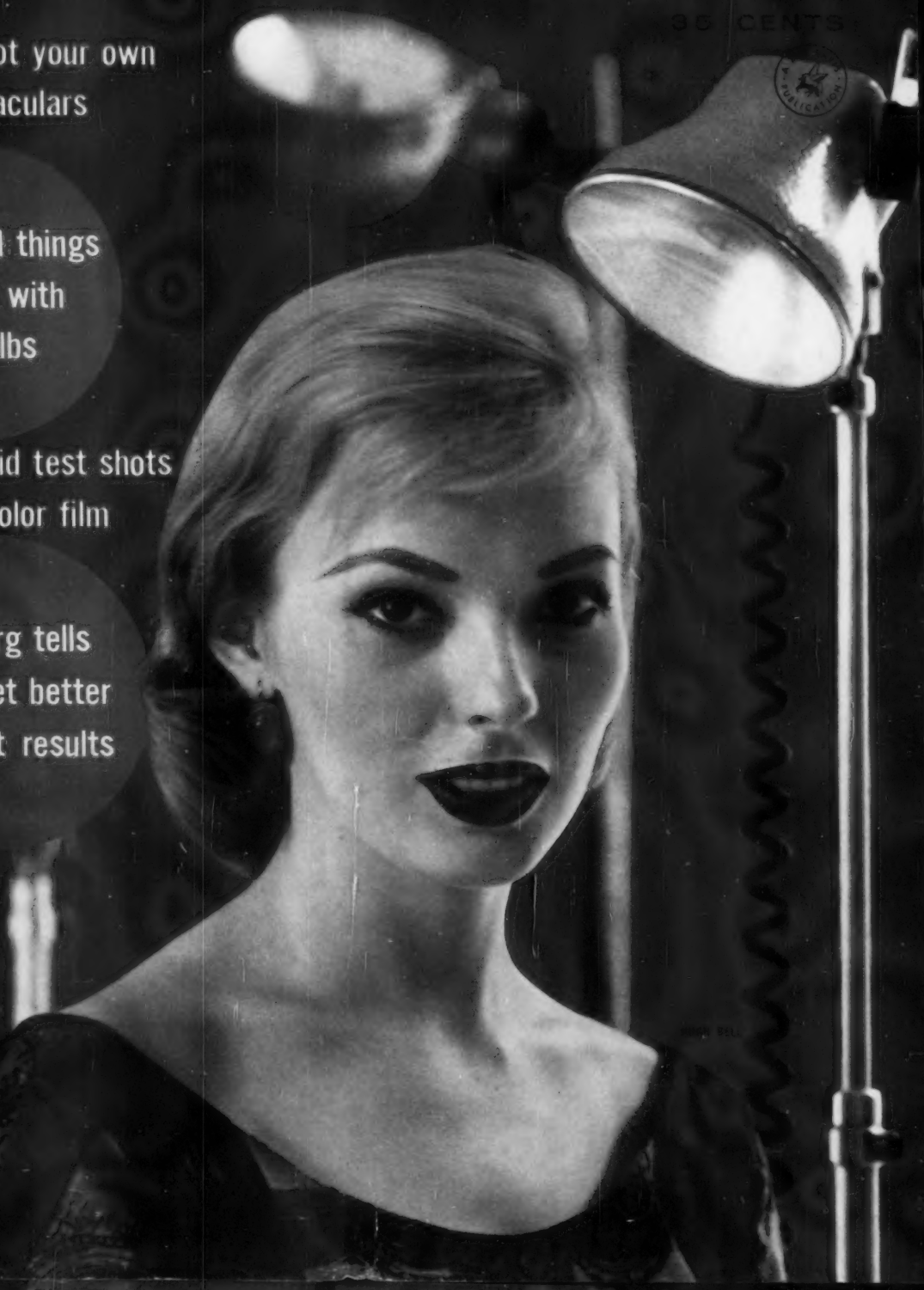
35 CENTS

How to shoot your own flash spectaculars

6 wonderful things you can do with M2 flashbulbs

How Polaroid test shots can save color film

Schwalberg tells how to get better speedlight results



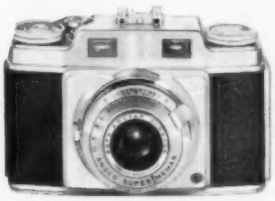
from Ansco an important message about Christmas giving

Technically excellent photographs can only be made with cameras that represent the ultimate in design, construction, and optics.

And surely, in anything as special as Christmas giving, only the finest will do.

That's why Ansco cameras and projectors are your finest choice in fine equipment. Each item in the Ansco line has been carefully designed and built to provide the utmost in image quality and pure photographic pleasure. It is equipment that every amateur will appreciate. It is the equipment that will turn casual snap-shooters into avid advanced amateurs!

ANSCO MEMAR TRAVEL OUTFIT. Here is a top quality economical 35mm camera. F/3.5 Apotar lens, shutter speeds of 1/25 to 1/200, X synchronization. Packed in a luxurious travel case with Ansco Universal Flash Unit, flash shield, ever-ready case and a 20 exposure roll of the new high-speed Anscochrome, $59.95.



ANSCO SUPER MEMAR F3.5. A superb 35mm camera. Combined rangefinder/viewfinder, rapid-wind film advance, prontor SVS shutter, and the needle sharp flare free Apotar F/3.5 45mm lens all combine to make this camera a top performer in any picture taking league. "Best buy" priced at $74.50.

ANSCO DUALET PROJECTOR. America's most popular! Takes every size of slide from 35mm to 2¼" square without extra accessories. Brilliant image quality with superb overall sharpness. Blower cooled and silent due to new fan blade design. Compartment holds 40, 2¼" cardboard slides. It can't be bettered even by projectors costing twice as much! All this at a low $39.95.

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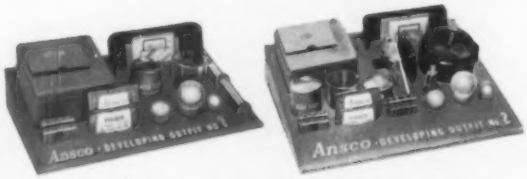

ANSCO DEVELOPING OUTFITS. For beginning photographers of any age, these complete kits are fully equipped for fast simple home processing. **No. 1 Developing Outfit** is for those who would like to make top quality contact prints. $10.95. **No. 2 Developing Outfit** contains everything for developing and printing. $15.95.

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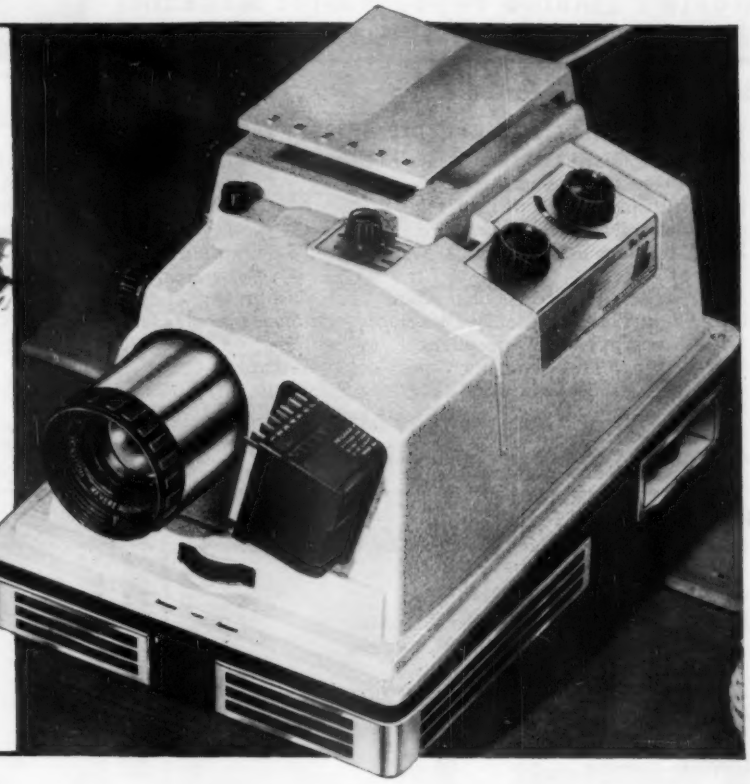
no accessories to attach!



SELF CONTAINED!

Everything built-in! All the controls for truly automatic slide projection in one self-contained unit. No dangling attachments. Just insert the magazine, set the switch, press the button and sit back and enjoy your slide show from anywhere in the room.

Shows 35MM, Bantam, and 1½"x1½" Transparencies Intermixed!

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Complete with self-contained carrying case in handsome Irish linen, viewing screen, extra condenser, cord and 7 Revere magazine trays, **$159.50**

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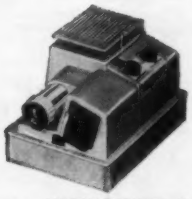
NEW, TRUE AUTOMATIC

Revere "888-D"

DELUXE 2x2 SLIDE PROJECTOR

Revere "888" Automatic. Completely automatic. Shows 36 slides of all type mounts as slow or as fast as you like—without touching a finger to it. Skips or selects slides at will. Returns slides to file automatically. 500-watt illumination. F/3.5 WOLLENSAK lens. With linen-covered case, viewing screen and 7 Revere magazine trays $144.50



Revere "553"/"555" Auto-Magazine. A touch of your finger shows 36 slides of all type mounts, mixed...in sequence, skip-selected or reprojected. Returns slides to file automatically. Choice of 300-watt or 500-watt illumination. WOLLENSAK F/3.5 Coated lens. Case and 7 Revere magazine trays.
555—500-watts $89.50
553—300-watts 79.50

POPULAR PHOTOGRAPHY is published monthly by the Ziff-Davis Publishing Company, William B. Ziff, Chairman of the Board (1946-1953), at 64 E. Lake St., Chicago 1, Ill. Entered as second-class matter July 30, 1937, at the Post Office, Chicago, Ill., under the act of March 3, 1879. Authorized by the Post Office Department, Ottawa, Canada, as second-class matter. SUBSCRIPTION RATES: One year, U. S., and Possessions and Canada $4.00; Pan-American Union Countries $4.50; all other foreign countries $5.00.

NOVEMBER, 1957

VOLUME 41, NUMBER 5

POPULAR PHOTOGRAPHY®

including CAMERA and AMERICAN PHOTOGRAPHY

WORLD'S LEADING PHOTOGRAPHIC MAGAZINE

Assigned by the editors of POPULAR PHOTOGRAPHY to shoot a cover for this flash issue, Hugh Bell of New York posed Meg Allen in the middle of a battery of speedlights against a red-paper background. The photograph was made by speedlight. Bell used a Hasselblad with 180-mm Sonnar f/2.8 lens, exposing 1/10 second at f/2.8 on Super Anscochrome. Symbolically, the cover represents the world of electronic flash.

SPECIAL FLASH ISSUE

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SUBSCRIPTION SERVICE: All subscription correspondence should be addressed to Circulation Dept., 64 E. Lake Street, Chicago 1, Ill. Please allow at least 4 weeks for change of address. Include your old address as well as new—enclosing if possible an address label from a recent issue of this magazine.

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$5.00 DOWN—CONVENIENT PAYMENTS

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1.25 post & handling

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With f2.8 Zeiss Tessar; pre-set diaphragm; focal plane shutter speed; 12 sec to 1/1000th; demonstrators or with import cert & guar use

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4x5 B&J PRESS

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90mm f6.8 COATED LEITMEYR COMPUR-RAPID SYNCHRO. 1 sec to 1/400th. For all 4x5 and 3¼x4¼ press. Reg. $49.50

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65¢ post & ins Lensboard & mounting (specify) 2.50

ONLY 10% DOWN CONVENIENT PAYMENTS

Easy budget payments. Select camera, send remittance, with age, occupation, 3 references. Subject prior sale. Add postage and insurance. Choose your camera in the condition you want. Column A-1 is used, but like-new. B-1 is definitely used. To pick best ORDER EARLY.

35mm CAMERAS

	A-1	B-1
Aires 35 III, f1.9	76.50	52.00
Argus C-3, case & flash	42.50	27.50
Argus C-4, f2.8	62.50	34.50
Argus C-44, f2.8 M-X	79.50	44.50
Bolsey B-2, f3.2 case	24.00	
Bolsey Jubilee, f2.8 case & flash		39.00
Canon IV S2, f1.8	142.50	119.00
Canon V, f1.8		169.50
Contessa f2.8 Rfdr	84.50	67.00
Contaflex I, f2.8 Tessar M-X	87.50	75.50
Contaflex II f2.8 Tessar MTR	107.50	94.50
Exa, f2.V M-X	44.50	33.50
Exakta, f2.9	53.00	41.00
Exakta II, f2.8	76.95	67.00
Exakta V, f2 Biotar	139.50	117.50
Exakta VX, f1.9 Primoplan	142.00	138.00
Exakta VX, f1 Auto Biotar	229.00	182.00
Exakta VX, f3.5 Tessar	142.50	119.50
Exakta VX, f2.8 Auto RF	186.50	
Exakta VX, f1.9 Auto Xenon		182.00
Exakta VX, f1.5 Angenieux		179.00
Graphic 35, f3.5	54.50	38.00
Kodak Retina IIIC, f2 Exp meter	99.00	83.00
Kodak Signet 35, f3.5 Ektar		32.50
Konica III, f2	84.00	61.00
Minolta A-2, f2.8	34.50	
Minolta A, f3.5	29.50	22.95
Praktica FX, f1.9 Meyer Pre-set		55.50
Pentacon f2, Biotar		87.00
Ricoh 35, f3.5 case & flash		27.95
Ricoh 500 ! f2.8 M-X-L	51.95	44.50

8mm MOVIE

B & H 200, f2.5	24.50	18.00
B & H 134 W, f2.5	39.50	31.50
B & H 172 B, f2.5	62.00	50.50
Brownie, f2.7	23.95	17.50
Brownie Turret, f1.9		44.50
Kodak Medallion, f1.9	103.50	87.50
Keystone K-25, f2.5		26.95
Revere 88, f2.5	42.50	33.00
Revere B-64, f1.9		87.50
B & H 253 Monterey	49.25	38.75
B & H Regent	109.50	78.95
Keystone K-109	81.95	67.00
Kodak Showtime	81.00	59.50
Revere 85	61.00	40.00
Revere 777	67.95	57.50

16mm MOVIE

B & H 200 A, f1.9	142.50	119.50
B & H 200 EE		188.50
Kodak Mag, f1.9	59.50	49.00
Kodak Royal, f1.9	102.00	85.00
Revere C105, Tur f1.9		122.50
B & H Statesman	152.50	
Keystone K-161	82.00	69.50
Revere 48	81.50	68.50
B & H 285 C, Sound		238.00
B & H 202 C, Sound		368.00

CONTAX — LEICA — NIKON

	A-1	B-1
Contax II, f2 Sonnar	79.50	63.00
Contax IIA, f2 Sonnar	161.00	114.50
Contax IIIA, f1.5 Sonnar	197.00	168.00
Leica IIIA, f2	82.00	61.00
Leica IIIC, f2 Summitar	134.50	
Leica IIIC, f2	104.00	85.50
Leica IIIF, f1.5 Summarit	229.00	188.00
Leica IIIF, f2	199.00	137.50
Leica M-3, f2 Summicron		268.00
Leica M-3, f1.5		275.00
Nikon S1, f2	189.95	
Nikon S2, f1.4		194.50

SLIDE PROJECTORS

300 w Argus, auto, case		27.00
300 w Brumberger, (2¼x2¼)	39.00	31.50
300 w Golde Manumatic	29.00	25.50
300 w Golde Reflex, (2¼x2¼)	46.00	31.50
300 w TDC Headliner	31.00	24.95
300 w TDC Mainliner	32.95	
300 w Revere 553	51.00	38.00
300 w SVE Skyline	32.00	25.50
500 w Revere 555	64.95	42.50
500 w Revere 888, Auto	79.50	60.50
500 w Bell & Howell Robomatic, Auto	114.00	84.00
500 w LeBello 88, Auto		42.00
500 w LeBello 78, Auto	112.00	89.00
500 w TDC Streamliner, Auto	56.00	45.95
500 w Kodak Signet		44.50

2¼ x 2¼ REFLEX

Aireflex, f3.5 Nikor	67.00	44.95
Kalloflex, Auto f3.5	89.50	63.50
Minolta L, f3.5	97.50	67.00
Rolleicord IV, f3.5 Xenar	82.00	49.50
Rolleicord V, f3.5 Xenar	99.00	57.00
Auto Rolleiflex, f3.5 Xenar M-X		109.00
Auto Rolleiflex, f2.8 Tessar		149.00
Soligor 66, f3.5	76.50	
Yashica C, f3.5	39.00	27.95
Yashica L, f3.5	49.50	36.95
Rolleiflex Standard, Tessar		19.95
Minoltacord, f3.5, New	47.95	

PRESS CAMERAS

2¼x3¼ Ann Speed Graphic, f4.5 cpld rangefinder	97.95	59.00
2¼x3¼ Busch, f4.5 dbl ext bellows CRF	74.50	59.50
3¼x4¼ Ann Speed Graphic, f4.5 cpld rangefinder	98.50	83.50
4x5 Speed Graphic, f4.5 CRF	96.50	79.00
4x5 Pace Crown, f4.5 CRF	144.50	97.50
4x5 Busch, f4.5 CRF flash	107.00	89.00
4x5 Linhof, f4.5 CRF flash		189.00

The above listing is published as a fair price guide. Not all items are necessarily in stock at all times in both A-1 or B-1 condition.

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LETTERS TO THE EDITOR

Comments on the September Issue

You're on the ball as usual. The September issue was original, informative, and a smash hit for my money. Continued success.

IVAN DMITRI
New York, N. Y.

Many thanks for the fine transparency I found in POPULAR PHOTOGRAPHY. I think it's tops.

RUSSELL R. STEVENS
St. Petersburg, Fla.

Your slide idea is wonderful. Why not a slide each month, covering outstanding events, even if the magazine will cost more?

ADAM CHURA
St. Louis, Mo.

I wish to express my gratitude for the exceptional article by Peter Gowland and how he photographed Venetia Stevenson. The duplicate Super Anscochrome slide is excellent and will be included with my collection of all the other articles and photographs by Peter Gowland. Let's see more by this master of the lens.

EDWARD T. CHERNEY
Lorain, Ohio

You have a good "first" to your credit in giving this slide to your readers. All who contributed to the making of this transparency are to be congratulated for the excellent results. This is consistent with your fine publication.

ROBERT R. TYLER
Redondo Beach, Calif.

Aside from the fact that the Venetia Stevenson deal was the most brilliantly conceived promotional scheme for magazines that these eyes have seen in many a year, I'll bet there is one statement I can make with utmost confidence: you haven't received a single dissenting opinion that she is the most beautiful gal in the world. So what does Hollywood do when it finally acquires an un-cut diamond that doesn't need cutting? It cuts. The reasoning must be that every starlet needs lots of make-up, Venetia is a starlet; she needs lots of makeup. Hollywood can't see the tree for the forest.

JACK SEBRING
Washington, D. C.

I offer my deepest congratulations for the Super Anscochrome slide of Venetia Stevenson. I projected it and was stunned by the results. The sharpness and detail exceeded my own original slides. When I read of the lighting conditions and the mass duplications I was speechless. I am only sorry that I have no slide to look forward to next month. Now that you have inaugurated this (you're always first) I hope you don't stop. I look forward to when you will have a "Slide of the Month" feature with an article on the slide and photographer and a duplicate slide for each reader. I would be quite willing to pay more for the magazine, and I'm sure I'm not alone.

ROBERT ALLEN
Pasco, Wash.

In reference to the Ansco slide, it is a matter of profound wonder to me that a transparency 4,000 degrees Kelvin out of balance between film (Daylight 5900) and light source (candle 1900) should have been selected for such a momentous occasion and tremendous reproduction. The manufacturers of filters should now dissolve as being entirely superfluous. Also, why did P. G. make his work harder by choosing a 85-mm lens for his Nikon 35-mm camera?

WILLIAM V. HOYT
Yoakum, Tex.

Your article on the most photogenic girl in the world—what rot, what a total lack of photographic integrity. Poor Ed Sullivan and his hard work culling pictures of beauties; the hours Gowland spent to bring his breathless audience a few shots where he really pushed the film. Hundreds of shots, all at ASA 100. You could have done a testing job on the Anscochrome; spent the money on getting more technical details instead of this overdone cheesecake. Venetia Stevenson is undoubtedly a nice girl, but yours is a photography magazine, not a movie one. She is no more photogenic than thousands of other girls; maybe you ought to spread the fame and money around instead of giving it to one.

IRVING WEISMAN
Bronx, N. Y.

Candid Chicanery

Just a bit of foolish chicanery taken with an inexpensive candid camera. I stood under a tree in the yard, held a

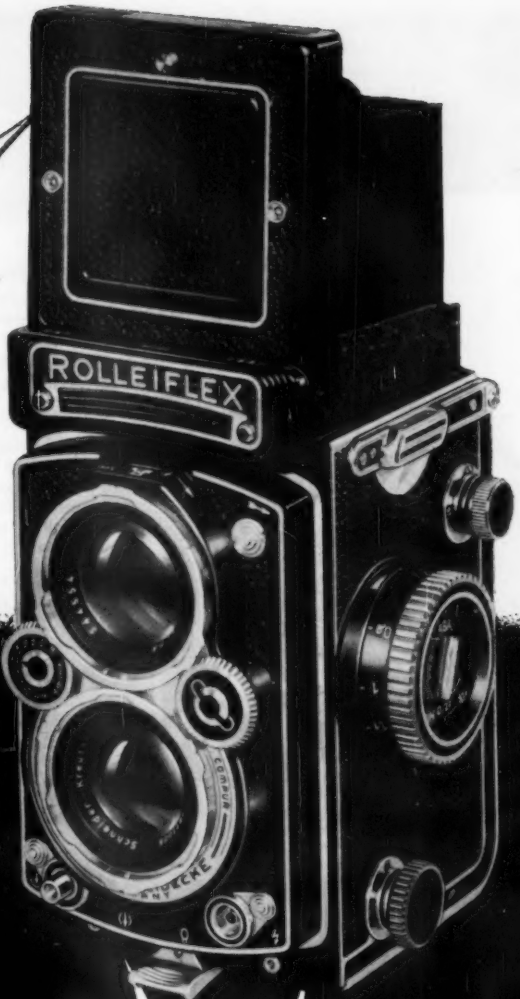
Tricky self-portrait

magnifying glass in my left hand, set up the image and with the camera in my right hand (each at arm's length) snapped the shutter.

ERVIN W. WILLIS
Tucson, Ariz.

UNBEATABLE

for Efficient Flash!



AUTOMATIC

Rolleiflex f:3.5

with XENOTAR or PLANAR lenses

AUTOMATIC ROLLEIFLEX 3.5 *plus* Rolleiflash . . . *the unbeatable combination for flash photography!* Think of the many advantages of this combination. Fast, convenient automatic camera operation . . . superb Rollei picture quality from an unequalled optical system . . . practical negative sizes, either 2 ¼x 2¼ or Super Slide size . . . a lightweight, compact flash unit that attaches in a jiffy, with a scientifcally designed reflector which throws maximum light evenly distributed without hot spots. Let your local dealer demonstrate this fast, convenient, efficient combination . . . or write for descriptive literature today.

AUTO ROLLEIFLEX f:3.5, $232.50 plus case . . . with built-in exposure-meter, $272.50 plus case. Other Rollei models from $133.65 to $331.50.

Rolleiflash B-C Flash Gun

Instantly attaches to top bayonet . . . exclusive shock absorbing mount . . . no cumbersome extra brackets. Built-in extension cord reel . . . test lamp . . . bulb ejector . . . connector for extensions. In zipper case, only $24.95.

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A 64X Booster—ASA, LVS, Movie and Polaroid Exposure Numbers—and at a popular price!

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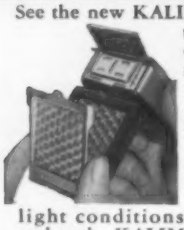
MODEL A-1 $6.95 Case, Chain $2.00

MODEL B-1 $11.95 Including Booster, Cases, Chain

See the new KALIMAR exposure meter, compare the quality and you'll be amazed at the low price! ASA—3 to 3200, Lens—f:1 to f:32. Has "high" scale measuring range for bright light conditions and "low" scale for dull light conditions. Uncluttered dial makes the KALIMAR meter extremely easy to use for incident or reflected light readings. And, for low level incident light readings under extremely poor light conditions, the KALIMAR with *64X BOOSTER* compares with the most sensitive meters on the market!



New KALIMAR CLIP-ON METER

Fits camera accessory shoe or can be hand held $7.95
Leather Case $1.00

See your dealer or write Dept. PM711

Kalimar Inc.

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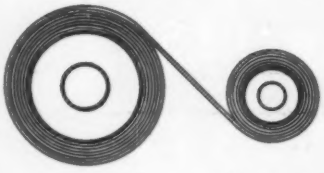
TOOLS AND TECHNIQUES

a round-up of recent developments and significant trends

Negator Spring. Our curiosity about the significantly longer running times of two recent movie cameras is now satisfied. A man from the Hunter Spring Company walked into our office the other day to tell us all about his company's Negator spring.

The Negator is a radical improvement in spring design, developed some seven years ago, but only recently used in motion picture cameras to give exceptionally long running times per wind. The Kodak K-100 (40 ft per wind) and the Bell & Howell 240 (32 ft per wind) are powered

CONVENTIONAL SPIRAL SPRING



power spool storage spool

NEGATOR SPRING

by the Negator, a strip of prestressed tempered steel which delivers power when wound against its natural curvature. The spring is stored on one drum, wound onto a second when the camera is wound; then its natural tendency to curl around the first drum powers the camera as it unwinds. There is no rubbing between spring layers, hence no "jumping" of the camera in the hands during operation. Also, its cold weather performance is excellent. Unlike spiral springs, the Negator has a driving force nearly constant throughout its entire running cycle.

Cronar Motion Picture Film. Now that special splicing methods have been developed (discussed in April *T&T*), this Du Pont photographic film base will soon be available to working photographers for the first time. We quote from the August-September issue of *Du Pont Magazine*: "Manufacturers have some models of tape splicers available now, and dielectric equipment will be on the market soon," says H. T. Harding, sales manager for motion picture products. "With the splicing hurdle cleared, we're planning to make the conversion early next year from triacetate to 'Cronar' safety base in our professional motion picture films."

The high-strength polyester base will be thinner than present motion picture bases, permitting approximately 30 percent more film length on standard spools.

Du Pont expects eventually to convert its motion picture and still films from conventional to Cronar base.

Tape Recorder Maintenance. Two new preparations introduced at the recent National Audio-Visual Association convention in Chicago remind us of the need for periodic cleaning of tape recorders. Deposits accumulate on recorder heads and tape-handling mechanisms in the course of normal use, causing a drop in reproduction quality and excessive tape wear. Carbon tetrachloride has been commonly used as a cleaner for these parts. It cuts grease, but leaves behind particles of oxide from the tape coating and actually makes them more abrasive by removing the dirt from between the sharp particles. Carbon tetrachloride may also dissolve the resin used to cement head laminations.

New Life Cleaner, made by the EMC Recording Corp., 806 East 7th St., Saint Paul, Minn., contains a solvent which softens the oxide bonding material. This makes it entirely unsuitable for cleaning tape, but gives it a cutting action that does remove the oxide from the head. A companion lubricant dries to leave a protective polydiamethysiloxane coating.

Magnetic Synchronizing Aids. The magnetic sound recording applications of Kodak's Pageant magnetic-optical sound projectors will be greatly extended by three new accessories previewed at the NAVA show.

Two of these, the Manual Speed Control Kit and the Synchronous Motor Kit, regulate speed to a precise 24 frames per second, making possible use of the projectors as double-system (separate sound and picture equipment) magnetic sound recorders. Perfect lip synchronization is possible when transcribing from a synchronous tape recorder, or when making "on the set" recordings in conjunction with a synchronously operated camera.

With the Manual Speed Control Kit, adjustment of braking pressure against a nylon spool slows projector speed. When a strobe pattern on the spool end appears stationary under 60-cycle neon or fluorescent illumination, the speed is exactly 24 fps. (Pageants are set to operate very slightly faster than 24 fps.) The Synchronous Motor Kit delivers control energy from a synchronous motor, whose speed is set by the 60 cycles per

Dowling's FIFTH AVENUE

SUPER BALDINA 35

Check this newest 1957 model of the world-famous line of BALDINA cameras and you'll agree that it is the outstanding camera in its field. Here are just a few of its wonderful features:

- **Color corrected, coated f/2.8 lens**
- **Light Value shutter to 1/300 second**
- **Single window coupled rangefinder and viewfinder**
- **Built-in self-timer**
- **Rapid film advance/shutter setting lever**
- **All metal precision construction**
- **Full flash synchronization**

Whether for brilliant color transparencies or sparkling black-and-white shots, the SUPER BALDINA is an ideal family camera. Best of all, you can buy it at DOWLING'S for only ..... **$49.95** including leather case and flash unit!

For a limited time, DOWLING'S also offers the SUPER BALDINA camera with case and flash unit **plus** a famous semi-automatic slide projector and 6 slide trays, a complete Color Slide Outfit, for only **$99.50 Cash or $9.50 Down.**

All components are brand new! Be sure to place your order **now!**

Space necessarily limits this display of products. You are invited to order *anything photographic* by mail from Dowling's!

You are an expert on exposure—automatically—with a MINOLTA AUTOCORD 'L'

The built-in, coupled exposure meter is aimed as you sight on your subject through the brilliant Fresnel viewing screen. All you do is set the shutter and diaphragm scales to match the light value indicated by the meter, and you have determined the correct exposure—every time! The convenient winding crank advances the film and readies the shutter in a split-second. The superior Rokkor f/3.5 coated lens is your assurance that the image on the film is even sharper than that you see in the viewfinder! And you can stop action with shutter speeds up to 1/500 second. You can own a MINOLTA AUTOCORD 'L' for only **$124.50 Cash or $12.50 Down!**

More value for the 35mm fan in the 1957 MINOLTA 'A'

The brilliant image shown in the coupled range/viewfinder of this amazing camera is all you have hoped for but would never expect at its low price. Focusing and viewing is easier thanks to this ingenious optical finder. The Minolta 'A' also has a single-stroke lever to advance the film and cock the shutter, a fully synchronized shutter to 1/300 second and the famous Rokkor f/3.5 coated lens. D.F.A. is proud to recommend the Minolta 'A' as a top buy at only **$49.95 Cash or $4.95 Down!**

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A NEW AURICON 16mm Sound Camera

Thousands of newsreel cameramen, TV stations, schools and other film producers have proved the superb quality and versatility of the AURICON Cine Voice camera. Now—finer than ever—the CINE VOICE II offers you the means for really great, exciting 16mm movies.

- **Single system recording of picture and optical sound together**
- **Synchronous operation for picture only —for double system sound**
- **Quick conversion to single system picture and magnetic sound on pre-stripped film with FILMAGNETIC.**

Auricon Cine Voice II outfit	$795.00 Cash or $79.50 Down
Auricon Cine Voice II with Professional 3-lens turret	943.00 Cash or 94.30 Down
Auricon Pro 600 camera head	1165.00 Cash or 116.50 Down
Auricon Super 1200 outfit	4652.15 Cash or 465.21 Down
Auricon Filmagnetic, installed on any new model	870.00 Cash or 87.00 Down

Specially priced, complete Auricon Pro 600 outfits available. Write us for details on all models. Order your Auricon equipment **today** direct from DOWLING'S Fifth Avenue—shipping and insurance FREE!

new 1957 Diax IIb

Amazing precision and versatility at a true budget price! All the important features you want in a fine miniature are built into this value-packed camera:

- **Fully interchangeable Schneider lenses**
- **Famous Compur Rapid MX Synchro shutter 1—1/500 second plus self-timer**
- **Built-in rangefinder coupling to ALL lenses**
- **Optical viewfinder for 50mm and 85/90mm lenses**
- **Rapid wind lever for split second operation**
- **Complete line of accessories available**

And now, thanks to improved production methods, DIAX IIb prices are lower than ever:

DIAX IIb with Isconar f/3.5 lens	Only $99.50 Cash or $9.95 Down
DIAX IIb with Xenar f/2.8 lens	Only 119.50 Cash or 11.95 Down
DIAX IIb with Xenon f/2.0 lens	Only 149.50 Cash or 14.95 Down

Accessory lenses widen the range of your 1957 DIAX IIb also at reduced prices:

Westron 35mm f/3.5 (wide angle)	Only $49.50 Cash or $4.95 Down
Xenagon 35mm f/3.5 (wide angle)	Only 69.50 Cash or 6.95 Down
Isconar 85mm f/4.0 (telephoto)	Only 49.50 Cash or 4.95 Down
Tele-Xenar 90mm f/3.5	Only 79.50 Cash or 7.95 Down
Tele-Xenar 135mm f/4.0	Only 89.50 Cash or 8.95 Down

You can own a complete DIAX IIb Three-Lens Outfit for only **$189.50 Cash or $19.85 Down!** Includes camera with 50mm f/3.5 lens plus Westron 35mm f/3.5 wide angle and Isconar 85mm f/4.5 telephoto lenses. Order your outfit from DOWLING'S Fifth Avenue today!

SAVE MONEY!

Get the right equipment from the start—at DOWLING'S! No substitutions, no "switching." Everything we advertise is *brand new*. You can buy with confidence from DOWLING'S Fifth Avenue!

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KALLOFLEX AUTOMAT

The Quality Camera That's Built For Speed

Check these specifications:

- **Exclusive coaxial focusing and film transport for one-hand operation**
- **Exclusive sloped viewing screen—avoids your shadow**
- **Superbly corrected f/3.5 lens, resolves 125 lines per millimeter**
- **Fully synchronized precision shutter 1-1/500 second**
- **Automatic—same lever advances film and cocks shutter**
- **Click-stop settings, visible from viewing position**

Eminent professionals have put the KALLOFLEX AUTOMAT through its paces and rate it tops! You too will find it a pleasure to use this fine camera — and for only **$119.50 Cash** or **$11.95 Down** (leather case **$11.50**). Order from DOWLING'S Fifth Avenue now!

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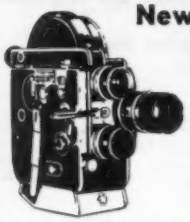

New 1957 Revolutionary Bolex H-16 Reflex . . .

with through-the-lens viewing and focusing while the camera is running! Find out why we say it pays to start with the finest —with Bolex. **Write today for FREE brochure and a FREE copy of the BOLEX REPORTER magazine.**

Bolex C-8 with Lytar f/2.5 lens	$89.95 Cash or $8.95 Down
Bolex C-8 with Lytar f/1.9 lens	119.95 Cash or 11.95 Down
Bolex B-8 with Yvar f/2.5 lens	119.50 Cash or 11.95 Down
Bolex B-8 with Yvar f/1.9 lens	149.50 Cash or 14.50 Down
Bolex H-8 Leader with Lytar f/1.9 lens	269.50 Cash or 26.95 Down
Bolex H-8 De Luxe with Lytar f/1.9 lens	370.00 Cash or 37.00 Down
Bolex H-8 De Luxe with Switar f/1.5 lens	432.50 Cash or 43.25 Down
Bolex H-16 Leader with Lytar f/1.9 lens	269.50 Cash or 26.95 Down
Bolex H-16 Reflex with Lytar f/1.9 lens	419.50 Cash or 41.95 Down
Bolex H-16 Reflex with Pizar f/1.5 lens	482.50 Cash or 48.25 Down
Bolex H-16 Reflex with Switar f/1.4 lens	535.50 Cash or 53.55 Down
Pan Cinor Zoom lens Model 70 f/2.4	369.50 Cash or 36.95 Down
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Bolex Electric Camera Drive	89.50 Cash or 8.95 Down
Bolex Tripod	78.50 Cash or 7.85 Down
Bolex Combination G8-16 Projector	339.50 Cash or 33.95 Down
Bolex M8 Projector with case	169.50 Cash or 16.95 Down
Bolex Titler and Special Effects Kit (16mm)	299.50 Cash or 29.95 Down
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Bolex M-8 Synchromat	89.50 Cash or 8.95 Down

Trade up to a new 1957 BOLEX. Your present equipment can serve as down payment. Write us for allowance or send your equipment to us, without obligation.

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UHLER CINE PRINTERS

Just announced—a brand new 8 & 16mm Cine Printer by UHLER. Make copies of your own film in minutes, save almost ¾ of the cost of commercially made copies! This new UHLER Precision Cine Printer handles color and black & white, sound and silent film, prints 100 feet in only 5 minutes. Capacity is 400 feet on both feed and take-up arms. Separate rheostats with 10 light settings give complete exposure control for picture and sound track, together or separately. Newly designed aperture and precision sprocket protect your original film, assure smooth, even transport. Easy to use, this new UHLER Cine Printer soon pays for itself. Only **$195.00 Cash or $19.50 Down.**

UHLER Combination Continuous Printer

A high-precision printer for professional and commercial users, as well as amateur perfectionists, who demand utmost efficiency and dependable performance. Specifications: 1200 foot capacity • printing speed to 1600 feet per hour • Oilite ball bearings • perfect frame line registration • Dual semi-automatic light control, changes as film passes • color filter holder • highly polished aperture • air cooled lamps. Price **$775.00 Cash or $77.50 Down.**

Other famous UHLER Precision Cine Printers

Combination 35mm Continuous Printer, sound and silent (Capacity 1200' feed and take-up discs) . . **$1145.00 Cash or $114.50 Down**

Reduction and Enlarging Printer for 8mm and 16mm film (Capacity 1200') . . . . . **$1056.88 Cash or $105.68 Down**

DOWLING'S Fifth Avenue can ship your order anywhere in the world!

New 1957 CONTAFLEX

Perfection in camera design—that describes the four models of the 1957 Zeiss CONTAFLEX. Here are some of the reasons:

- **Single-lens reflex system—free from parallax**
- **Life-size, brilliant viewfinder**
- **Split-image rangefinder PLUS ground glass focusing as part of viewfinder**
- **Fully automatic diaphragm—lens is always wide open for focusing**
- **Famous Zeiss Tessar f/2.8 lens**
- **Built-in photo-electric exposure meter on models II and IV**
- **Interchangeable lens components on models III and IV**

CONTAFLEX I	$153.00 Cash or $15.30 Down
CONTAFLEX II (built-in meter)	176.00 Cash or 17.60 Down
CONTAFLEX III (interchangeable lens)	176.00 Cash or 17.60 Down
CONTAFLEX IV (interchangeable lens plus meter)	199.00 Cash or 19.90 Down
Pro Tessar 35mm f/4.0 lens for models III and IV	89.50 Cash or 8.95 Down
Pro Tessar 85mm f/4.0 lens for models III and IV	99.50 Cash or 9.95 Down

DOWLING's also offers proudly the incomparable CONTAX—finest camera bearing the ZEISS name. With its all-metal focal plane shutter to 1/1250 second and complete battery of lenses from 21mm wide angle to 135mm telephoto, the 1957 CONTAX masters any assignment! CONTAX IIa with Sonnar f/2.0 lens **$298.00 Cash or $29.80 Down;** with Sonnar f/1.5 lens **$318.00 Cash or $31.80 Down.** CONTAX IIIa (built-in meter) **$30.00** additional. Write us today for complete, FREE Contax brochure!

ONLY 10% DOWN!

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YOUR TRADE-IN CAN SERVE AS DOWN PAYMENT — EASY TERMS ON BALANCE!

You Can Order *Anything* Photographic From Dowling's!

Dowling's FIFTH AVENUE

We proudly present the new—ALL NEW—matchless

PENTRON TAPE RECORDERS

Years ahead in design and performance, the new Pentron recorders offer the ultimate in finest quality sound reproduction. And their operation is simpler than ever, thanks to the wonderful new single rotary control for play, record, fast forward and rewind!

Aristocrat Model NL-3. A magnificent instrument with response of 40-15,000 cps • illuminated VU meter • four speakers • up to 10W peak output • automatic braking • two speeds • double LC crossover network, plus a host of other exclusive features. Designed (but not reserved) for the connoisseur. Regularly $269.95. At Dowling's only **$199.95 Cash or $19.95 Down.**

Champion Model NL-2. Enjoy truly professional response with this superb new recorder! Features include interlock button • two speakers • Magic eye indicator • response to 13,000 cps • two speeds • automatic braking.
Regularly $209.95. At Dowling's only **$159.95 Cash or $15.95 Down.**

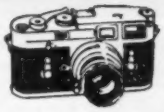
Mercury Model NL-1. Unsurpassed for quality and value. For those who appreciate truly fine sound reproduction. Never before available at this low price. Regularly $149.95. At Dowling's only **$119.95 Cash or $11.95 Down.**

You can order your new PENTRON Recorder equipped for thrilling Stereophonic Sound. Only $30.00 more ($3.00 Down).

BONUS with your new PENTRON from DOWLING'S: Six reels of two hour recording tape (value $33.00) **FREE** of extra charge (mention "Bonus Tape" when ordering).

New 1957 Exakta II-A

Latest version of the original single lens reflex and finest ever—don't confuse with older models! With improved Rangefinder Penta Prism and choice of Fully Automatic lenses: Westanar f/2.8 **$299.60 Cash or $29.96 Down;** Tessar f/2.8 **$333.00 Cash or $33.30 Down;** Biotar f/2.0 or Xenon f/1.9 lens **$399.00 Cash or $39.90 Down.**



Superb New 1957 Leica M-3!

Leica M-3 with Elmar f/3.5 lens **$363.00 Cash or $36.30 Down;** with Summicron f/2.0 lens **$456.00 Cash or $45.60 Down;** with **New** Dual Range Summicron f/2.0 and Optical Viewing Unit **$495.00 Cash or $49.50 Down;** with Summarit f/1.5 **$495.00 Cash or $49.50 Down. New** "RF" Summaron f/3.5 lens with Viewing Unit **$139.50 Cash or $13.95 Down.**

1957 1000F HASSELBLAD

Single lens 2¼ x 2¼ Reflex by Swedish master craftsmen. Synchro shutter to 1/1000 second, Tessar f/2.8 pre-set lens, interchangeable film magazine and lenses plus a host of accessories give the HASSELBLAD unusual distinction and versatility. Price **$379.50 Cash or $37.95 Down.** Write for free booklet!

New 1957 ROLLEIS!

Rolleicord Va with Xenar f/3.5 **$124.55 Cash or $12.45 Down;** Rolleiflex 3.5G **$232.50 Cash or $23.25 Down;** with built-in exposure meter **$272.50 Cash or $27.25 Down.** Rolleiflex 2.8E **$291.50 Cash or $29.15 Down;** with built-in meter **$331.50 Cash or $33.15 Down.**

- **LIFETIME GUARANTEE**
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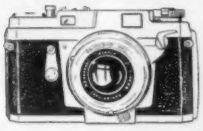
Now—Get Even More in the newest KONICA III



You've seen the independent reports certifying the superb quality of this amazing 35mm camera. Now, you get the latest Light Value MXL shutter and an improved rectangular range-viewfinder, brighter than ever before PLUS other luxury features such as:

- Rapid advance lever **on front of camera.** Easiest for vertical as well as horizontal shots
- Brite-Line, single window coupled range-viewfinder
- Built-in self-timer
- Crank-fitted rewind
- World-renowned Hexanon f/2.0 lens

With all these advantages, the new KONICA III still does not cost $300.00 as you might think. **It is only $124.75 Cash or $12.75 Down**—at DOWLING'S.

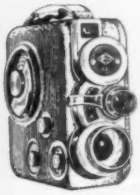
THE LENS ALONE IS WORTH THE PRICE!

Be sure to order these useful accessories, too:

Leather eveready case	$12.50	Send for complete
KONIFLASH III (BC)	9.95	illustrated brochure
KONI HOOD lens shade	2.95	FREE at DOWLING'S!

End your movie exposure problems with the EUMIG C-3

the Electronic Eye 8mm Camera



Look through the bright, clear viewfinder of this marvelous new camera. You see a fine cross-hair and a needle. While shooting, you keep the needle centered with its fingertip control and you **know** you are exposing each frame perfectly! Yes, anyone can make perfect movies with the new EUMIG C-3. And it keeps pace with your greater skill and ambition! The fast, superbly corrected f/1.9 coated lens lets you film even in poor light, needs no focusing. Variable shutter speeds are provided. The Electronic Eye meter can be matched to the ASA speed of different films for constant accuracy. An accessory wide-angle lens component s-t-r-e-t-c-h-e-s your field of view when shooting in close quarters. Distant subjects are brought close by an accessory telephoto lens. With all these features and many more, the EUMIG C-3 is only **$129.95 Cash or $12.95 Down!** Or, get the complete EUMIG C-3 outfit, including both Telephoto and Wide Angle lens components for **$194.85 Cash or $19.85 Down.**

For better movies—**automatically**—order your EUMIG camera from DOWLING'S today!

EXTRA!

FABULOUS NEW BELL & HOWELL ELECTRIC EYE CAMERAS NOW IN STOCK. WRITE FOR DETAILS—TODAY!

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AIR MAIL TODAY!

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Please ship the following immediately:_____

Enclosed is $_____

☐ Down Payment ☐ Complete Payment.

I agree to pay $_____ monthly for_____ months until merchandise is paid for.

I wish to trade in:_____

☐ Give me tentative allowance by mail.
☐ I am shipping equipment for exact allowance.

Your trade-in may be used as down payment! It will be returned at D.F.A.'s expense if you don't accept our top offer.

☐ Send FREE literature on_____

☐ Send pamphlet on "Deferred Payments."

Name_____

Telephone No._____

Address_____

City or Town_____ State_____

Dowling's
FIFTH AVENUE

1957 PRAKTINA FX

Take a look at the future through the viewing system of this revolutionary camera. Single lens reflex—of course! Plus split-image rangefinder combined with eye-level prism viewfinder that can be replaced with an accessory waist-level finder. Plus a built-in optical viewfinder for sports or available light. And the PRAKTINA FX is the first to bring you a choice of INTERNALLY controlled, fully automatic lenses (prices include camera and lens):

With Tessar f/2.8 lens	$239.50 Cash or $23.95 Down
With Biotar f/2.0 lens	297.50 Cash or 29.75 Down
With Quinon f1.9 lens	299.50 Cash or 29.95 Down

The PRAKTINA FX is the center of a whole system of superior photography with such exclusive accessories as these:

Rapid Sequence Spring Motor	$69.50 Cash or $6.95 Down
Electric Remote Control	150.00 Cash or 15.00 Down
50 ft. Bulk Film Magazine	69.50 Cash or 6.95 Down

FLASH! RADIO CONTROL FOR PRAKTINA FX!

Sensational new device permits control of the PRAKTINA FX camera as far as a mile away! There are no external wires; all you need is the camera, electric motor and the amazingly compact Radio Control Unit. A whole new concept of photography is opened by this marvelous development. Here are just a few of the many applications of the PRAKTINA Radio Control: Wild Life • Industry • Research • Crime Detection • Sports • Banking • Weddings. You can take up to 420 exposures with the Bulk Film Magazine, or use standard cartridges. Write to DOWLING'S for full details, or place your order today!

BESELER—For a Lifetime of Perfect Enlargements

To get the best possible enlargements from your negatives, these features are "musts":

- **Absolutely rigid construction.** BESELER Enlargers alone have a structural frame based on 4 triangular trusses, for complete freedom from vibration.
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- Movie camera speeds
- Color film range indicator
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- Reads reflected or incident light with accessory Invercone

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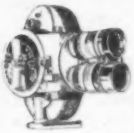
EMEL



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$99.50 Cash or $9.50 Down*

Accessories include Tunnel Sight (illustrated) **$6.00**; B-C Flash Unit **$34.50**; Extension Flash **$29.50**. Order your Undersea Housing complete with only 10% Down at DOWLING'S!

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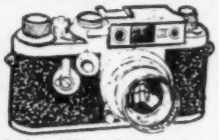
ARE YOU READY FOR A LEICA?



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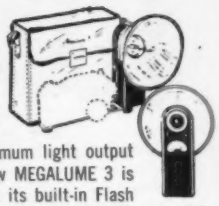
PERFECT LIGHTING ANYWHERE WITH MEGALUME Electronic Flash Units



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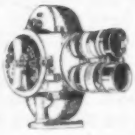

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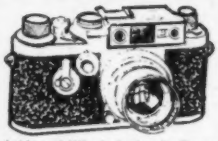

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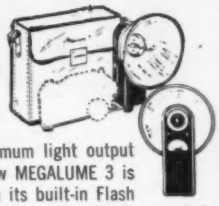

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The old saying is that "good things come in small packages" and FR's smallest chemical package is an example. It's the revolutionary FR X-22 in its new one-ounce bottle, conveniently packed in a set of three for 75c. This special developer is for those photographers who have already noted the extremely fine grain results possible with the thin-emulsion films as Panatomic-X or Adox.

Development of these special films in ordinary fine-grain developers . . . even in FR's popular X-33B super fine grain soup . . . is akin to kicking your tripod during a time exposure! These thin emulsion films need the kid-glove care that FR X-22 delivers. If you've not had the opportunity to find out for yourself what a really sharp enlargement looks like, you can make your first trial with the same perfection achieved by the country's top-notch photographers. They use FR X-22 and you can too. It's available at any camera store. Just add water, develop and fix.

ENDS HYPO STAIN

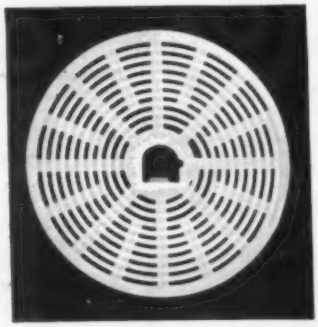
FR continually improves and expands its chemical lines, and in the array of FR bottles in the rack at most stores you may not have noticed a new sea-green label. It's for FR's newest agent, FR HYPO NEUTRALIZER, which is something you won't appreciate till 1967, again in 1977 and 1987. Prints soaked in this pre-wash solution retain so little hypo that they qualify for archival storage.

If this doesn't mean anything to you just now, ask any photographer how his ten-year-old prints look today. Even his well-washed prints will reveal the telltale golden circles of hypo stain. Other prints will have the sad orange look of wrapping paper, where once gleaming black and white tones brought soul-stirring satisfaction.

You can buy FR HYPO NEUTRALIZER in either of FR's two popular sizes, 8-oz. and 32-oz., costing only $.49 and $1.19. The smaller size will safeguard at least 3 months of your prints and negatives; the larger size should be ample for a year's work unless you live in the darkroom and only come out for air and a trip to your local store for more supplies. If your dealer hasn't gotten around to adding FR's HYPO NEUTRALIZER to his stocks, maybe you can explain to him why you need it. He'll pass the word along to lots of others who really need this print protection.

DOUBLE-DECKER DEVELOPING

From FR's sales of Minolta A's, Minolta A-2's and Super A's, we know only too well how important 35mm photography has become to even the family photographer who once was satisfied with a box camera. The chances are that just about everyone is playing with 35mm today, and FR has a nifty little gadget to



help the thriftiest photographer. It's called the FR Double Flange.

This device permits the darkroom hobbyist who owns one of FR's million Developing Tanks to process two rolls of 35mm film at one time! That's right! It makes a double-decker reel out of the present tank reel. Your dealer will be glad to open a box so you can examine one and see for yourself how neatly it accomplishes this task. If you'll look it over, you'll buy it. It costs only $1.30, and we don't see how you can resist saving the time and materials. You can still feed only one roll into the tank if that's all you've exposed . . . even with the flange in place. How can it miss?

second frequency of line current, to hold the projector motor to an exact 24 fps.

Third accessory is the Two-Projector Synchronizing Kit, which interlocks two Pageant projectors by means of a timing belt. This allows a magnetic or optical sound track on one projector to be recorded as magnetic track in the second projector, and also makes possible a preview of picture and separate sound track before the two are combined.

Prices are not available as we go to press, though Eastman plans to have the kits in stores by the end of October.

f/0.7 Lens for Satellite. Dr. Frank Back, president of Zoomar, Inc., told us of an unusual lens-design problem he encountered while developing a special lens for the U.S. earth satellite. The lenses had

Earth satellite lens will report on weather. Lens has 3" front element, weighs only 2½ oz.

to be fast, lightweight, and be able to withstand the tremendous force of rocket firing. A two-element lens design, with plastic Fresnel front element and a small glass rear element was decided upon. Fresnels cannot be made to precise focal lengths, so the glass rear elements were individually ground to match each Fresnel. In the satellite, the lenses will image the earth's surface on a tiny infrared photoelectric cell. Light intensity changes will indicate location of clouds over the earth, and the information telemetered back to earth for weather prediction.

Tri-Color Timer. Type C production labs will be interested in this new split-second timer made by Nems-Clarke, Silver Springs, Maryland. It is actually three electronic timers in one, each adjustable in 0.1-second increments over a range of 0.1 to 111 seconds. A novel "exposure factor" adjustment is provided on each of the three timers, allowing the user to compensate for color balance and speed variations from emulsion to emulsion without changing the basic time setting.

Odds & Ends. A standard for the quantity and coverage of light for electronic-flash units is currently under development by the American Standards Association. It now appears that this will be expressed in two figures, a BCPS rating for the amount of light in the beam center and an angular measurement of coverage of the unit.—

Announcing a new model Polaroid Land Camera

The 150

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HERE is a particularly fine 60-second camera made especially for the discerning picture-taker. It has a coupled rangefinder—long-base, unit power, superimposed-image type, operated by a smooth action focusing knob on the camera bed. The same motion also automatically aims the viewfinder to eliminate parallax and insure accurate composition. The camera has an excellent, coated triplet lens of high resolving power (modified Cooke design).

The new features of the model 150 Polaroid Land Camera assure you of sharp, excellently composed pictures. Loaded with the new high speed panchromatic Polaroid Land film, this camera will produce pictures of a quality you'll find difficult to match.

Make it a point to visit your photo store and see this new model Polaroid Land Camera. Take a couple of shots with it yourself. We think you'll be quite impressed with how far 60-second photography has advanced . . . with how fine a precision instrument you can own for only $109.95.

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Reasons for Unsharpness

I get good black-and-white pictures with my 35-mm cameras but when using Anscochrome my pictures appear to be fuzzy or muddy. Can this be caused by the firm or by the camera?—I. S., St. Petersburg, Fla.

When people complain of lack of sharpness in color films and say that the black-and-white pictures shot with the same camera are excellent, I immediately suspect that they have been shooting with fast black-and-white films where they are able to shoot stopped down *and* at high speeds. With color films which are not quite so fast (but nowadays *some* of them are very fast) when you shoot at slower speeds you may shake the camera, or the camera itself may jump if not shot at high speeds. Furthermore, when you shoot with the lens wider open for color, you do not have as much depth of field, so your camera may not be focused correctly and you do not get the added depth of field necessary to bring your pictures into focus with the out-of-adjustment focusing.

I suggest that you have your camera checked by a competent repair man or dealer. Have him check to see that the lens focuses sharply on a picked subject and that the rangefinder or focus device and focusing scale all coincide when the image is sharp on a groundglass held over the film aperture.

Color-processing Chemicals

Where can I get the chemicals for processing color materials?—B. L. H., San Diego, Calif. (and many others).

Over a year ago I discouraged the use of mix-your-own chemicals for color processing and still do. The principal manufacturers of color film supply kits and ready-mixed developers *not* to make you pay more, but because it requires skilled chemical control to measure out accurately the almost infinitesimal quantities of certain chemicals which are very important to the formula. I received hundreds of letters, many of them offering to send formulas and lists of supply sources. Nonetheless, I take a stubborn stand on the subject: the manufacturer of the color film is as anxious as anyone to have it turn out well. He *wants* you to get perfect pictures so you'll buy more film. If he thought an individual could mix a one-pint quantity, he'd publish the formula—as has been done for black-and-white materials.

My own experience and that of top technicians confirms my stubborn conclusion: buy a developing kit from the firm manufacturer. Then, if you have any serious troubles, you will know where to go for help. If you were able to mix the chemicals properly for the various color-processing solutions, you would save but a few cents a batch over the price of a kit. But you would spend a good deal longer in time getting the various chemicals together, accurately measuring and weighing them, and then you would have the problem of having to determine how fresh the chemicals were when you got them and how to store them satisfactorily until you needed them again. 'Tain't worth it!

Faulty Daylight Shots Indoors

How can I correct the color in pictures I make indoors with Daylight Ektachrome and sunlight coming through the window? The results are quite red.—H.J.K., Detroit, Mich.

It is very difficult to prescribe for color faults from the data and slides sent to me. Several things seem apparent, however. The exposures do not seem to be long enough, and it is possible that the daylight coming through the window is so low in the sky as to be very red, or it may be that you are getting much reflection off a red wall of some sort. There is also a possibility that the films were not processed promptly after exposure, or that the camera or film was exposed to excessive heat. All of these are possible faults that might cause the effect shown on the film. Please note that this might not necessarily be *your* fault, either. You say nothing of how the film was processed, and films might have been botched up in processing. When, in Ektachrome processing the steps of washing and clearing between color developer and bleach are omitted, an over-all red effect is given and this might have happened to your film. Playing detective by mail is difficult, especially when I don't know all of the conditions prevalent or what happened to other pictures on the roll.

NOTE: Sometime ago we wrote about the problems of slides sticking together when Scotch tape is used, and I suggested treating such sticky slides with cornstarch or talcum powder which would stick to the gooey edges and then, when the slides were cleaned of the extra powder, they would not stick to each other. Dr. Dred Meixner, of Peoria, Ill., has very kindly written to tell me that when he mounts slides and uses tape, he paints the edges with thin shellac and lets it dry thoroughly. If the slides are thoroughly dry before painting so there is no moisture inside, this makes an effective seal against air and moisture. I would guess that this might also help prevent or discourage growth of mold.

Many thanks, Doc!

Questions of general interest to the color photographer will be answered in this department. However, individual replies can not be given for questions that are not used.—Ed.

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35-mm TODAY

by Bob Schwalberg

Mechanization Runs Amok

Ever since 1839 and all that, the technical progress of photography has been concerned as much with the simplification of picture-making as it has been with the production of better materials, methods, and equipment. In this unceasing effort to make photography easier, and acceptable results more certain, no single problem has received more attention than that of correct exposure determination. It is only in the last few years, however, that the trend toward greater simplification has taken a turn which has caused many thoughtful photographers to view with alarm rather than with approbation.

This new trend toward simplification (or oversimplification, if you like) began several years ago with the cross-coupling of the lens-aperture and shutter-speed controls which were recalibrated in a series of abstract numbers originally called the light-value system (LVS) and now known as the exposure-value system (EV numbers). Then came the resurrection of two prewar ideas: The built-in exposure meter and the automatic control of exposure by means of current generated by a photoelectric cell.

A recent editorial in the British weekly, *Amateur Photographer*, describes a new 35-mm single-lens reflex manufactured in East Germany (but otherwise unidentified) as having: *"a built-in exposure meter that surveys the scene at which the camera is pointed, and if the shutter speed and stop do not agree with the reading of the meter, the shutter cannot be released."* With typical British understatement, the writer continues: *"If this infuriating device served simply as a warning that a mistake might have been made, and the shutter speed and stop might usefully be checked, we should have nothing against it . . . But . . . there is no need for such high-handed action . . . We regard this as automation run mad."*

And so do I.

Existing exposure simplification devices do not, up to this point at least, employ such idiotic police-state methods. They can, count your blessings, be disconnected, by-passed, or ignored by the serious worker who wishes to control his own exposures and determine his own picture quality.

Behind this supersimplification lies an attitude toward exposure which may be characterized as the Water Valve Theory. If, by way of analogy, a valve opened all the way will fill a bucket in one minute, operating it half open for two minutes, or a quarter open for four minutes will produce the same effect: a bucketful of water. Unfortunately, however, photographic negatives and transparencies don't act in exactly the same way as water buckets. An exposure of 1/250 at *f*/2 may have the same exposure value as ½ sec at *f*/22, but the final results will be more than somewhat dissimilar.

Exposure is more than just a necessary evil, and involves more than simply letting a given amount of light pass through the lens to the film. It is a creative control which may be exploited by means of variable lens openings and shutter speeds to affect density, contrast, depth of field, sharpness, and the ability to stop moving action.

But, the argument runs, *f*-stops and shutter speeds are far too difficult for the average person to understand. Numerical exposure values, it is alleged, are the only answer.

I don't think so. The *f*-system is really not that complicated; nor is the EV system so much more simple. The trouble is that the beginner is being subjected today to a double-barrelled barrage of propaganda, one blast telling him that photography is so ridiculously simple that little or no effort is required from him, and the other that photography is so staggeringly complex that he'd best settle for something so simple that almost no adjustments are necessary, or still better, get an automatic camera that'll do all of his thinking for him.

Extreme contrast demands accurate compromise exposure to capture full tonal range.

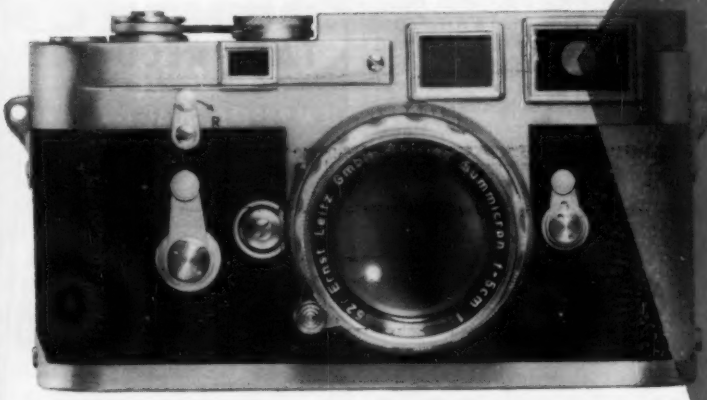
When I started in photography as a high-school student, one of the first things that I noticed was that an exposure meter didn't give a single answer, but a whole series of different answers, one for each lens aperture. The problem was to find out what these apertures meant. And, between the meter dial (*which showed how each aperture passed half as much light as the next larger, twice as much as the next smaller*), the camera's depth-of-field scale (*which showed how small apertures got more in focus than big ones*), and a couple of elementary beginners' guides, I found out all I've ever really needed to know in order to make pictures.

The wonder of it all was that neither I nor any of the kids with whom I shared this beginner's discovery of photography ever realized that there was anything so terribly complicated about *f*-stops and shutter speeds. Actually, there isn't.

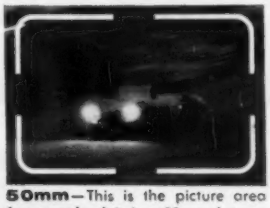
(*Continued on page 22*)

Leica M-3

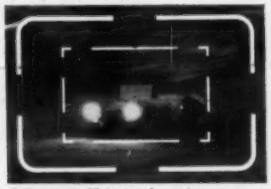
ONE FINDER, AUTOMATIC FOR FOUR FOCAL LENGTHS...



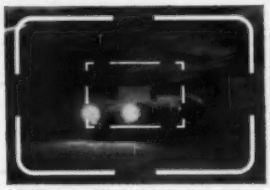
35mm—This field appears when the Leica wide-angle lens, the RF Summaron f/3.5, is attached.



50mm—This is the picture area for standard Leica 50mm lenses, f/1.5, f/2, f/3.5.



90mm—This is the picture area for Leica 90mm lenses.



135mm—This is the picture area for Leica 135mm lenses.

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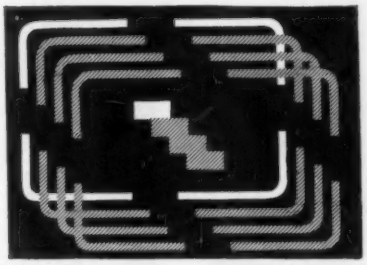

*Viewfinder frames move continuously to compensate for parallax at any distance from the subject.

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Today, however, with so many meters calibrated solely in EV numbers I can readily concede that a generation of numerically brain-washed beginners may very well have trouble trying to relate these two entities, and may even find them somewhat quaint and old-fashioned.

At least one new 35 points a prophetic finger at the future by having only EV calibrations, with no indicated *f*-stops or shutter speeds.

Actually, this is not as far-fetched as it may appear, for the EV system really makes very little sense, from a simplification point of view, unless the *f*-stops and shutter speeds are eliminated. The way the system is set up on most cameras is this. There are three scales: *f*-stops, shutter speeds, and EV numbers, which usually run from "2" to "18," each number passing twice as much light as the next higher number, half as much as the next lower.

What EV "simplifies," if it simplifies anything at all, is reading the meter. Instead of a combination of exposures for each lens aperture, the meter gives one answer in the form of an EV number. It is also worth noting that the majority of EV-calibrated meters employ extremely wide bands between the pointer and the scale so as to make the recognition of anything less than a full stop's difference in exposure extremely difficult.

After obtaining his single EV meter reading, and setting this onto his camera, he's ready to shoot, or he thinks he is. Actually, he'd better take a good look to see what aperture and shutter speed he happens to have, because 1/500 at *f*/4 and 1/30 at *f*/16 may both be EV "10," but they certainly won't make the same picture. Of course, if he happens to be at *f*/16 and wants to shoot at *f*/4, by moving the diaphragm he'll automatically switch his shutter over to the 1/50 speed.

Eventually, however, when they get around to completely eliminating all aperture and speed markings he won't be able to make this adjustment, and then we'll have true simplification. Whether we'll also still have photography is a very moot point. And, with the Big-Brother-Is-Watching type of automatic exposure control in which the camera won't let you take the picture until you've set the exposure value commanded by the meter, we'll be all set. All set to take up stamp collecting, that is.—

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With f2.8 Coated Pre-Set Lens!
~~$229.50~~
69.95
• Synch for Flash and Strobe
• Shutter Speeds 1 to 1/1000 Sec.
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With f1.9 Coated Pre-Set Meyer ~~$299.75~~ 89.95
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B&H-TDC SHOWPAK
• 300-W., 2x2 Slide Projector • Carry Case • Semimatic Slide Changer
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• 300-Watts • Blower Cooled • 4" Coated Lens • All-Metal

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AC Unit Only, Value $34.95 – 14.95

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CINE-RAPTAR LENS
½" f1.9 Coated Lens in Focusing Mount For Your 8mm Movie Camera!
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Top-Name Tape Recorder
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Automatic ROLLEIFLEX
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BELL & HOWELL '220'
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Slide Projector
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ZEISS CONTAFLEX II
With f2.8 Coated Automatic Tessar!
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ZEISS CONTAFLEX I
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POLAROID '95' CAMERA
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We Imported Complete Factory Output!
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• Camera With Needle-Sharp f3.5 Coated Lens • DeLuxe Carrying Case • Fan-Fold Flashgun
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AMPRO 'FUTURIST'
8mm Movie Projector & Case!
List $159.95! NOW ONLY **99.50**
• 500-Watts • Blower Cooling • f1.6 Coated Lens • Fast Rewind

74 SPECIAL OFFER! SAVE $47.00! LIKE NEW!
35mm Aires III Camera
With Needle-Sharp f1.9 Coated Lens!
List $99.50! NOW ONLY **52.50**
• Synchronized for Flash & Strobe • Coupled RF • Speeds to 1/500

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YASHICAMATREFLEX
With Sharp f3.5 Ctd. Lens!
List $75.50! NOW ONLY **47.50**
• Built-In MX Flash Synchronization • Automatic Transport • Self-Timer

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TELEPHOTOLENSES
For Use On Praktica, Rival Reflex, Hexacon, Pentacon, Contax 'D' etc.!
135mm f2.8 Coated Pro-Sot Peerstar. List $89.95 **39.95**

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REVERE 85D 8mm Projector
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Graflex 'Constellation'
500-Watt 2x2 Slide Projector!
List $67.75! NOW ONLY – **37.95**
• 500 Watt Lamp • Blower Cooling • 4" Ctd. Lens • Automatic Changer

79 EXCLUSIVE! SAVE $29.05! BRAND NEW!
TESTRITE ENLARGER
With 3½" f4.5 Coated Lens!
List $59.00! NOW ONLY – **29.95**
• For 35mm – 2¼x3¼" Negatives • Cool Lamphouse • Adjustable Copying Arm

80 GREAT BUY! SAVE $153.45! LIKE NEW!
35mm KINE EXAKTA-VX
With f2 Ctd. Automatic Zeiss!
List $336.95! NOW ONLY – **183.50**
• Flash Synchronized • Speeds to 1/1000 • Self-Timer • Interchangeable Lens

81 SPECIAL VALUE! SAVE $33.55! LIKE NEW!
B&H Streamliner-500
2x2 Slide Projector • Case!
List $79.50! NOW ONLY – **45.95**
• 500-Watts • Blower Cooling • f3.5 Lens • Semimatic Changer

82 SPECIAL BUY! SAVE $26.00! LIKE NEW!
35mm Minolta 'A' Camera
With Coupled RF and f3.5 Coated Lens!
List $49.95! NOW ONLY – **23.95**
• Full Flash Synchronization • Speeds to 1/300 • Auto. Cocking

83 SPECIAL OFFER! SAVE $68.55! USED!
MINOX III-S CAMERA
Famous Miniature! f3.5 Coated Lens!
List $139.50! NOW ONLY – **70.95**
Built-in Flash Synchronization • Speeds to 1/1000 • Automatic Film Transport

84 SPECIAL VALUE! SAVE $12.00! LIKE NEW!
Realist 620 Projector
For 2¼x2¼, 35mm and Super-Slides!
List $39.95! NOW ONLY – **27.95** Used
• 300-W. Lamp • Blower Cooling • 5" Ctd. Lens • All-Metal

85 GREAT OFFER! SAVE $49.55! LIKE NEW!
35mm ARGUS-C4 Camera
With Coupled RF and f2.8 Coated Lens!
List $84.50! NOW ONLY – **34.95**
• MX-Flash Synchronization • Speeds to 1/300 • Double Exp. Prevention

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PEERFLEKTA 'V' Reflex
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First camera to play a dramatic part on the famous "miscellany page" of Life Magazine! (June 3, 1957 issue)

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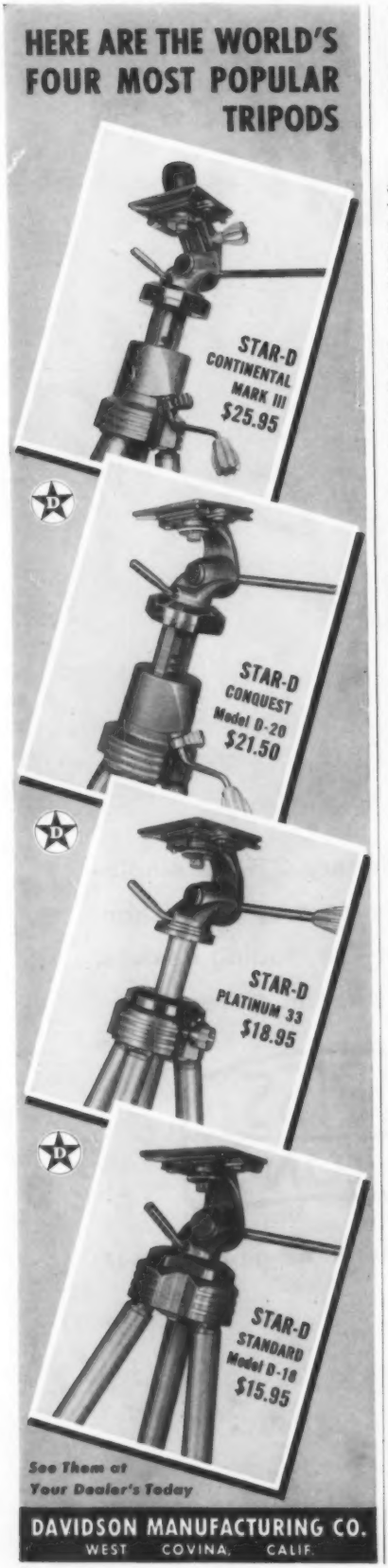

CAMERA CLUBS

by Whit Hillyer

With cameras becoming more and more automatic, the time is just about here when the making of a well-exposed picture no longer is any great feat. As yet this applies mostly to movies, but we may be certain that the same technical advances in still cameras will be with us eventually.

As one who has yelped loud and long about button-pushers, I could be expected to greet such technological developments with dismay. And so I do, up to a point. It irks me, certainly, to realize that the guy who has learned his film emulsions and exposure routines the hard way can't expose pictures any better than an untrained beginner who simply picks up one of the new wonder cameras, aims, and shoots.

But it isn't as simple as all that, either. For one thing, subject matter remains highly important, as do such things as camera angle and shutter speed (or camera speed in movies). Your Automatic Jack can fire away and still come up with some beautifully exposed pictures of junk. Or pictures which are framed poorly or which exemplify uninspired choice of camera position, subject pose, or lighting. The tyro movie maker still will pan across a scene as though he were using a garden hose. The uninformed still-shooter will move the camera or choose the wrong shutter speed for the purpose.

To take it a step further, the trained photographer knows that sometimes intentional underexposure or overexposure is indicated for just the artistic effect he wants. Your automatic camera can be adjusted manually for such things, sure—but it takes a little know-how to bring it off properly. You must know from experience when, where, and how much to deviate from normal exposure.

Finally, let's admit (though I do so grudgingly) that when fumbling around with exposure no longer is necessary, the competent photographer is free to concentrate on his subject and how best to photograph it for maximum interest.

I still think the men will be separated from the boys, automaticity or no. And I'll no longer spoil any film by forgetting to stop down or open up the lens as needed. In my own case, this latter factor alone may make the whole thing worth while.

Lecture on Portraiture Is Taped

Number 24 in the PSA Recorded Lecture series now is available. It's "Creative Portraiture," by J. M. Endres, FPSA. With 68 slides and an hour-long taped commentary, the lecture tells how to plan portraits, select model and props, use the monochrome viewing glass, and improve portrait technique in various other ways. For information on this program write to Fred H. Kuehl, 2001 46th St., Rock Island, Ill.

Malayan Wants Pen Pal

One of our readers in far-off Malaya has written to seek correspondence with an American photographer. The gentleman is a teacher by profession and an amateur photographer. Here's the address: B. C. Bhattacharjee, 1061 Jalan Melati, Off Imbi Road, Kuala Lumpur, Malaya.

Please Note

Many announcements of forthcoming salons and their closing dates are sent to this department. To expedite handling, such material should be addressed to "Salon Calendar." Also, for obvious reasons, salons which have closing dates in the very near future cannot be publicized, due to the normal amount of time required in getting out a monthly magazine.

California's Ann Johnson was chosen Miss Photo Fiesta during the annual photographers' carnival sponsored by Southern California CCs at Redlands.

Correspondence Wanted

Having shifted emphasis to color-slide work (although not to the exclusion of black-and-white), *Boston YMCA Camera Club* is especially interested in corresponding with other color clubs. Ideas and suggestions will be welcomed. Write to William F. Potter, 45 St. Botolph St., Boston 16, Mass.

Correspondence is wanted by RCA/MTPRA *Camera Club*, which got off to a good start last fall. Write to W. A. Price, Building 989-2, M.U. 511, RCA

Any Club Pictures?

Photographs of interesting camera club doings are welcomed by this department. We can't undertake to return pictures submitted, and actual use of them in the column will depend on suitability and available space. But good pictures stand a good chance of being used—so send them to Whit Hillyer, Camera Club editor, POPULAR PHOTOGRAPHY, 366 Madison Ave., New York 17, N. Y.

He got that memorable shot in natural color with his 35mm Exa—a camera that's so easy to use that even a child will get perfect shots with it the very first time!

If you haven't previously handled the single lens reflex Exa, you will be pleasantly surprised and thrilled with it, for only the Exa makes photography simple and easy! Yes, only the Exa permits you to take color, black and white and flash pictures according to your own, exclusive taste!

Telephoto and Wide Angle lenses are quickly interchangeable with the Exa. Everytime you switch a lens, in effect you not only create a new camera, but you preview on the ground glass (without extra housings) the very picture you will get – a feature which is not offered in any other camera system!

You'll be proud to own the 35mm single lens reflex Exa . . . the camera that inspires confidence the very first time . . . the camera that is produced by the makers of the world-famous Exakta. See the Exa today, on display at better camera stores everywhere. Free colorful Exa brochure available on request.

Exa with Waist Level Reflex finder and 50-mm,
F/2.9 Meritar Lens with Pre-set Diaphragm $79.50
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100-mm F/4.5 Isconar Telephoto Lens (pictured on Exa) . $25.00
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Service Co., Patrick Air Force Base, Fla.

If you work in 16-mm sound, you might be interested in corresponding with a new West Coast group organized to study drama using home-grown sound movies as an audio-visual aid. Write to Jack Kawai, Buddha Film Productions, 2110 W. 31st St., Los Angeles 18, Calif.

Stallion Camera Club wants to contact other clubs in its area. Write to Fred Wann, Redwood Photo Lab., 3432 West Glenrosa, Phoenix, Ariz.

We hear that *Toronto Camera Club* arranged for a photo field trip to an Indian reservation. A subscription was taken to defray expenses involved in having the Indians set up a picturesque village with inhabitants in full costume. Some excellent color shots resulted.

Chicago Cinema Club still gives its address as the Civic Opera Building. Don't let that fool you, though—it's really the Kemper Insurance Building, and has been for several years.

Boeing Employees Camera Club requests that correspondence be addressed to the club in care of the Boeing Airplane Company Recreation Unit, Box 3707, Plant 2, Seattle, Wash.

Municipal Photographic Club of St. Paul's "Photo Flash" is an interesting and legible bulletin.

The California clubs seem to have it made insofar as elegant meeting places are concerned. *Berkeley Camera Club* recently moved into beautiful new quarters in the Live Oak Community Building. And San Francisco's *Sunset Camera Club* has moved into the wonderful new Recreational Arts Building, which in my *Sunset* correspondent's words is "fantastic—a dream come true." Several clubs meet in this latter location. And I hear that folks in Detroit and Chicago are agitating for similar civic meeting places.

Can anyone help *Photo Club of New Jersey* line up speakers and other program items for this club year? If so, drop a line to Lou Renzulli, 83 Boyd Ave., Jersey City 4, N. J.

The venerable *Berks Camera Club* (Reading, Pa.) finally gave in. The board of directors voted to admit ladies to membership. It had been "men only" for 19 years! I seem to hear equal numbers of groans and cheers from the readers.

New England Camera Club Council really offers something special to its member clubs. A partial list of *Council* services includes recorded lecture programs (with prints and slides); taped commentary service (send in your club prints and slides and get a taped evaluation of same); a large list of capable speakers and judges; and an interesting array of print and slide circuits. If you could read my mail you'd know what an important job this council is doing—many a club has died on the vine for want of just such assistance.

Is your club on our mailing list? If not please send name and address to: POPULAR PHOTOGRAPHY, Department 307, 366 Madison Ave., New York 17, N. Y.

GUARANTEED GUIDE NUMBERS

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Feature for feature we honestly believe this speed flash unit is the finest on the market. No other unit offers guaranteed guide numbers—guaranteed light output. No changing of f. stops from picture to picture. Uniform illumination from edge to edge. Fast re-cycling with a ready-light that guarantees a picture every time. Complete with built-in AC operation. Smallest and lightest flash head! 200 to 300 flashes with just 80c worth of batteries, only $69.95 including mounting bracket, 10′ line cord, power pack with adjustable shoulder strap and flash head.

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Recharging time	12 to 13 sec.	4 to 5 sec.
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- **Top-grain "California saddle leather" leather case for the power pack. Handsomely styled, unusually efficient.**
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MX flash synch.—selftimer Automatic.

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4 x 5	135mm Xenar f/4.7	310.	290.	20.67
	135mm Optar f/4.7	382.	330.	25.47
	127mm Ektar f/4.7	382.	330.	25.47
	135mm Tessar f/4.5	362.	312.	24.14
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35mm EXAKTA VX
With 50mm f/2 Zeiss auto Biotar or 50mm f/1.9 auto Xenon or Quinon
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Famous Zeiss Camera with f/2.8 Tessar
Parallax free—automatic diaphragm

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List $19.95 Special **12.95**
Price includes four bulbs and Eveready Case. A must for every movie maker, switch for dim or bright.

Special offer! Brand new. Save $51.00.
KODAK RETINA IIIC
With coupled RF and f/2 coated Xenon
List $165.00 Now only **118.75**
Flash synch. speeds to 1/500 exp. meter selftimer.

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With 50mm f/2 automatic lens
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52 x 70 screen and 16mm editor
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Finest single case Filmosound projector professional features

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EXAKTA VX OUTFIT
50mm f2 pre-set Biotar
List $595.90 Now only **249.50**
Price includes:
- Free Exposure Meter
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- Split-image Rangefinder Insert
- Extra Ground Glass Insert
- 135mm f3.5 Pre-set Telephoto lens
- Extension Tube set
- B.C. Flashgun
- Leather Case

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With RF & Carl Zeiss 50mm f/2 ctd. Sonnar
List $298.00 Special **145.75**
Flash synch. speeds up to 1/250 delayed action selftimer.

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B&H SOUND PROJECTOR 202
and 52 x 70 screen and 16mm editor
List $833.50 Complete only **530.00**
Optical and magnetic sound single case unit finest sound projector made. For other sound projectors, ask for our special prices.

Unusual savings. Special
EXA MX OUTFIT
with 50mm f2.8 Westar Click-Stop lens
List $216.50 Our price **97.50**
Outfit contains:
- Split-image Rangefinder Insert
- Penta Prism Finder
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- Extension Tube set
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- Leather Case

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KEYSTONE 8mm PROJECTOR
Model K-1050 with carry case
List $169.50 Now only **74.50**
750-watt lamp blower cooled built-in editor still and reverse

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MINOX IIIS
Latest model – synch. and ctd. lens
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Built-in synch. – case and chain.

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REVERE 777, 8mm PROJECTOR
102.00
Large allowance for your present projector or other trade-in. f/1.6 lens, AC/DC, 500-watt lamp, 750-watt optional.

Spectacular saving. Brand new. Save $234.70.
LEICA IIIF
With 50mm f/2 ctd. Summitar lens
List $384.20 Only **149.50**
Fully synch. – speeds to 1/1000. Coupled RF 1000s of Leica lenses and accessories available.

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Turret camera with 3 lenses
List $519.00 Yours for **347.50**
17mm f 1.9, 25mm f 1.9, 3" f 1.5 lenses and finders.

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AUTO ROLLEIFLEX
With f/2.8 Xenotar with built-in exp. meter.
Only **115.00**
Plus your Auto Rolei. 2.8.

Great value. Brand New. Save
KALIMAR REFLEX
with 80mm f3.5 pre-set lens
List $99.50 Special **74.50**
Single lens reflex. Fully synch., Focal Plane Shutter, Auto film transport, speeds to 1/500 of sec.
150mm f4 Telephoto lens $59.95
52mm f3.5 Wide Angle lens 74.50
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Everything available on our easy Time Payment Plan. Take 6 to 24 months to pay.

Latest 1957 Model. Finest 35mm camera. Greatest value.
LEICA M-3
with 50mm f3.5 Elmar 290.00
with 50mm f2 Summicron 359.50
with 50mm f1.5 Summarit ... 396.00

Newest Leica Model. Special value.
LEICA III-G
with 50mm Elmar f3.5 ..... 195.00
with 50mm Elmar f2.8 ..... 218.00
with 50mm Summicron f2 ..... 269.50
with 50mm Summarit f1.5 ..... 299.50
New bright-line Viewfinder, automatic flash synchronization, separate focusing rangefinder.

Other Leica Lenses and accessories prices on request.

Exclusive! 1957 model – Save $190.
PENTACON F
With 50mm f/2 Zeiss Biotar
List $339.50 Now only **149.50**
Penta-prism – built-in fully automatic diaphragm – interchangeable fully automatic lens – fully synch.

Brand new! Electric eye automatic.
200 EE 16mm CAMERA
With f/1.9 ctd. lens – automatic exposure control – five speeds.
List $299.95 Pay only **125.00**
—and your 16mm movie camera in trade subject to inspection.

Special. New 1957 model.
ALPA 6
With automatic Apo-Chromatic Switar f/1.8 lens –
Single-lens reflex camera with prism viewfinder and rangefinder. Alpa 7, Alpa 5 – lenses and accessories – new and used in stock.

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HASSELBLAD REFLEX 1000F
With f/2.8 Pro-tet Tessar
List $379.50 Special only **199.50**
Finest 2¼ x 2¼ reflex camera Speeds to 1/1000 all lenses and accessories available

Smash offer! Brand new. Save $50.00.
ROLLEICORD V
With f/3.5 ctd. Xenar lens and new Eveready case
List $149.50 Now only **98.50**
Automatic-MX synch.—cross-cpld. selftimer.

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Please ship the following immediately: _____

Enclosed is $_____ ☐ Down Payment. ☐ Complete Payment.
I agree to pay $_____ the balance $_____ monthly in ___ 6 mos. ___ 9 mos. ___ 12 mos. ___ 15 mos. ___ 18 mos. ___ 24 mos. ___ (please check one).
I wish to trade in: _____
☐ Give me tentative allowance by mail. ☐ I am shipping equipment for exact allowance.
Your trade-in may be used as down payment! It will be returned at our expense if you don't accept our top offer.
☐ Send FREE information and prices on _____
☐ Send pamphlet on Grand Central Time Payment Plan. ☐ Send Catalog.
City _____ Zone ____ State _____
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Yes...

With a Built-in Exposure Meter

plus Coupled Rangefinder and All The Other Amazing Features of the

SAMOCA

35mm Precision Camera for only

39.95

Over 200,000 satisfied SAMOCA owners say, "It's a lot of camera for the money." In these three great models, with luxury features, you get even greater value.

Sensational SAMOCA Series X

SAMOCA 35X . . . with built-in exposure meter and 50mm f/3.5 lens.....$39.95

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The rugged, sensitive SAMOCA Exposure-Meter is accurately calibrated for ASA 6 to 1600, lens stops f/2.8 to f/22, shutter speeds 1/10th to 1/200th.

All 3 SAMOCA Models Feature:

Coupled Rangefinder • Single Window Rangefinder-View-finder Shutter Speeds 1/10th to 1/200th and Bulb • Full MX Synchronization • Built-in Depth-of-Field Scale • Automatic Film Advance, Shutter Cocking and Exposure Counter • Body Shutter Release • Removable Back • Click-stopped Lens Diaphragm—Smart, Compact, With Satin Trim and Anodized Finish.

See Your Dealer or Write for Literature

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1114 First Avenue, New York 21, N. Y.

Canada: Precision Cameras of Canada Ltd. Montreal, Toronto, Vancouver

WHAT'S NEW —TRADE NOTES AND NEWS

All data and descriptions ascribed to products listed herein are those claimed by the manufacturers and distributors, and listings are not to be construed as endorsements by POPULAR PHOTOGRAPHY. For further information write to address given in trade note.

CAMERAS

RICOH 500, a 35-mm camera, is announced as being available in a new model featuring a light-value scale, magnified exposure-counter window; frame counting begins after first two frames are pulled through in the loading process. Other features (rapid-advance trigger, single-window range-view-finder, duo-lever fingertip focusing, folding rapid-rewind crank, cord and cordless flash synchronization, and removable back) remain unchanged. Price is $69.95; case, $10. Full details available from Riken Optical Ind. Ltd., 521 Fifth Ave., New York 17.

EASTMAN KODAK announces several new 35-mm cameras. All feature the Exposure Value System which places exposure information right on the camera. The Kodak Pony II has a 44-mm Kodak Anastar f/3.9 lens with zone focusing, flash synch, a self-setting 1/45-sec shutter, and an automatic film stop and exposure counter. Price, $26.75. The Kodak Pony IV features a 44-mm Kodak Anastar f/3.5 lens, zone focusing, X-synchronization, shutter speeds from 1/30 to 1/250 sec and B, and double-exposure prevention. Price is $39.95. The Kodak Signet 30 (above) has no-thread loading, single-stroke film advance, and projected-field viewfinder with parallax markings. Lens is a 44-mm Kodak Ektanar f/2.8 with a Kodak Synchro 250 shutter having speeds from ¼ to 1/250 sec and B. Price is $55. The Kodak Signet 50 is similar but in addition has a photoelectric exposure meter reading in EVS numbers. Price, including a Kodalite Super M-4 Flasholder accepting M2 and No. 5 flashbulbs and with 3- and 4-in. reflectors is $82.50.

TANACK IV-S, a 35-mm camera, has a focal-plane shutter with 12 speeds from 1 to 1/500 sec, helical focusing from 1½ ft, conventional and electronic-flash synchronization, coupled rangefinder, automatic film advance and shutter-cocking, double-exposure- and skip-frame-prevention devices, and accepts interchangeable lenses. Price, with a 6-element 50-mm Tanar f/2 lens, $169; case, $10. Wide-angle and telephoto lenses and other accessories are available. Importer is Kine Camera Co., Inc., 11 W. 20th St., New York 11.

AMIFLEX II, an all-metal twin-lens reflex camera, is announced as having two improvements: shutter speeds to 1/300 sec and new 80-mm f/3.5 lenses. Coupled focusing system, depth-of-field scale, flash synchronization, and double-action-type shutter features are same as found on original model. Price, $29.95, includes case and flash.

CAMERA OUTFITS are announced by Eastman Kodak Co., Rochester, N. Y. A Starflex Outfit consists of this Brownie camera, a six-shot Rotary Flasholder, 12 M2 bulbs, 2 rolls of film, and a 15-volt battery. Price is $24.95. The Brownie Bull's-Eye (finished in a gold tone) is available with a Midget Flasholder, 2 rolls of film, batteries, and 8 M2 bulbs. Price is $20.95. Kodak Pony IV Outfit contains this new camera, Kodalite Super M-4 Flasholder with interchangeable reflectors, camera case, and a Kodak pocket viewer. Price is $58.40. Kodak Pony Color Slide Outfit (Pony IV camera and Kodak 300 projector with Readymatic changer and a preview screen) is priced at $104.50. Kodak Signet 40 camera with the Rotary Flasholder, battery, filter kit, and camera case is priced at $96.

ROLLOP is a twin-lens reflex camera made in Western Germany and introduced by North American Imps., Chicago 45. It features 4-element 80-mm Lithagon f/2.8 lenses; fully automatic film advance and shutter cocking with a single-action fold-away crank lever; automatic stop; exposure counter; double-exposure prevention; Prontor SVS shutter with a light-value scale cross-coupled to aperture and shutter speed settings; speeds from 1 to 1/300 sec; self-timer; MX synchronization; shutter safety lock; hinged back. Price is $119.95.

CAMERA ACCESSORIES

READY CASE for Bell & Howell 220 and 252 cameras is made of pigskin, with a removable top and front. Distributed by Photographic Imp. & Dist. Corp., 67 Forest Rd., Valley Stream, N. Y., price is $5.95.

SAMENCO MOVIE CONTROL for time-lapse movies is announced by Sample Eng. Co., 17 N. Jefferson, Danville, Ill. Model MC-5B20 operates in a 1-sec to 20-min range; Model MC-5B50 operates from 1 sec to 50 min. Price is $210 for either. Special time range settings are $15 extra and a full range of accessories is available.

STANDARD CAMERA CORP. offers an electric motor-magnetic remote control that converts the Praktina FX camera to automatic film transport. Used with such triggering devices as the push-button release, the radio-control unit, foot switches, etc., it provides complete control of camera operation at distances up to a mile and more away. Price, complete with battery-connecting cable, push-button release cable, and instruction manual, is $150.

LENSES AND ACCESSORIES

PAILLARD announces price reductions on many of its movie lenses. New prices are: Pan Cinor-70, $369.50; Pan Cinor-100, $439.50; the 1-in. Piza f/1.9, $82.50; 16-mm Yvar f/2.8, $59.50; the 3-in. Yvar f/2.8, $69.50; the 4-in. Yvar f/3.3, $89.50; and the 1½-in. Yvar f/2.8, $52.50. Also reduced is the Kern Paillard Filtin lens, a ½-in. Yvar f/2.8 with built-in filters and automatic filter-factor adjustment. Price is $54.50. The combination price of the Bolex C-8 8-mm camera with Filtin has been reduced to $119.50. Distributor is Paillard Inc., 100 Sixth Ave., New York 13.

EXTENSION-TUBE SET for Praktina and Hexacon Supreme cameras has been introduced by Accura Industries, 150 Broadway, New York. The aluminum outfit consists of a 10-mm tube with female bayonet adapter, another 10-mm and a 25-mm tube, and a male bayonet adapter. Price is $9.95.

LENS CAP to fit 50-mm automatic Westanar and Westagon lenses on 35-mm single-lens reflex cameras has been introduced by

ALL YOU HAVE TO DO IS LOOK!

Keystone

REMOTE CONTROL, FULLY-AUTOMATIC 2"x2" SLIDE-SHOW PROJECTOR

K-310 300-WATT PROJECTOR
with Case, 40-Slide Tray
$89.95 remote control timer, $14.95

NOW . . . THE ONLY FULLY-AUTOMATIC, TUNNEL-TYPE PROJECTORS AT THIS PRICE . . . (almost $50 less than other makes). Set the remote control timer for desired interval; sit back and enjoy yourself! Projector will automatically show each slide, change to next one . . . through entire tray of 40 slides. Super-Optic beam shows pictures up to 51% brighter, sharper than any other projector. Built-in chamber for permanent file tray; blue light "eye-ease" filter between changes. See the K-310 at your Keystone dealer's. Easy budget terms. (Also at your dealer's: Keystone K-500D Automatic 500-Watt Slide-Show Projector, $114.90 complete with remote control timer; Keystone K-300 Automatic 300-Watt Slide-Show Projector with easy lever-operated slide advance, $69.95.)

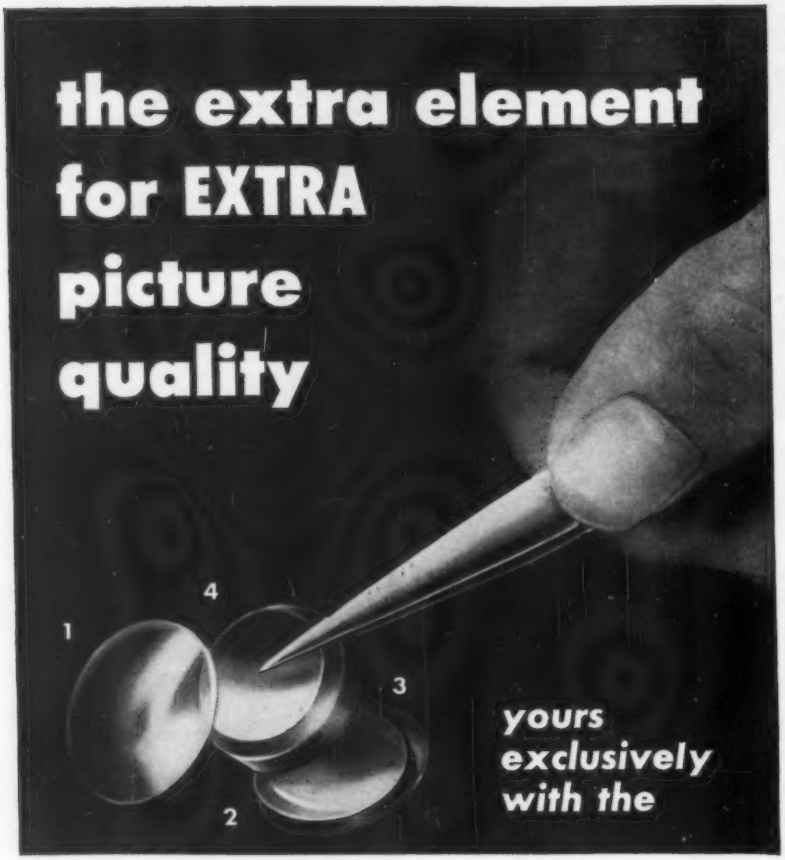
CHECK ALL THESE ADDITIONAL FEATURES:

- Single-acting switch for motor and lamp.
- 4" Magna-Scope f3.3 coated, color-corrected lens. Superior corner/center ratio and resolution.
- Pressurized cooling keeps slides safe.
- Exclusive louver design directs light and air away from operator's face.
- Universal 40-slide tray provides permanent index slide file, accommodates 2" x 2" slides in glass, cardboard, metal mounts.
- Lightweight, die-cast aluminum for years of service.

Keystone

Registered in your name with a lifetime guarantee . . . backed by 35 years of precision engineering in the photographic field.

Keystone Camera Co., Inc., Boston 24, Mass. Movie Cameras & Projectors, Slide Projectors © 1957



Minolta 'A'

MINOLTA

...the only less-than-$50 camera with a 4-element lens

It's an established fact in lens designing, that with each additional element, the corner-to-corner sharpness and over-all picture quality are progressively improved. That's why the Minolta 'A' with its 4-element lens, gives better pictures than any other camera in its price range ... for all others have a lens with only 3 elements. And, that's not all ... this fine Minolta lens is **the** famous Rokkor f/3.5.

Add to this, a single-stroke film advance and shutter-set lever ... a brilliant, single-window, coupled range/viewfinder ... a fully synchronized Optiper MX precision shutter (speeds 1 to 1/300th sec.) with exclusive shutter speed selector wheel on top ... click-stop diaphragm ... and it's obvious that the Minolta 'A' is the outstanding value in 35mm cameras for only.....**$49.95**

(Leather case and accessories available)

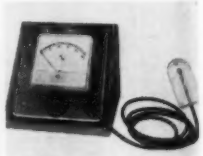
Also, ask to see the New Minolta 'A-2' featuring 'lumi-frame' coupled range/viewfinder and famous Rokkor f/2.8 lens.....ONLY $69.95

CHIYODA KOGAKU SEIKO CO., LTD., Osaka, Japan
New York Office.....150 Broadway, New York 38, N. Y.
U. S. Sales Agent.....The FR Corporation, 951 Brook Ave., New York 51, N. Y.
Canadian Agent.....Anglophoto Ltd., Montreal, Toronto, Vancouver

Photographic Imp. and Dist. Corp., 67 Forest Road, Valley Stream, N. Y. Price is $1.

EXPOSURE METERS

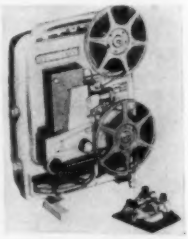
L-21 has joined the Sekonic exposure-meter line. A built-in booster switches-in automatically for low-level illumination. It has scales on both sides so that the photographer can take a reading from either front or back. The L-21 is calibrated for ASA 6 to 6400, apertures from *f*/45 to *f*/1.4, shutter speeds from 1/1000 to 60 sec, has LVS and Polaroid settings, and movie-camera speeds. It also provides for filter factors. Price, with incident-light attachment, leather case and neck cord, is $14.95. Further information is available from Brockway Camera Corp., 1114 First Ave., New York 21 or, Ponder & Best, Inc., 814 North Cole Ave., Hollywood 38.



FOTOMATIC CORP., 2603 Kessler Blvd., N. Drive, Indianapolis 22, Ind., announces production of the Elwood Densitometer & Light Meter, Model MA-1. Controls are an on-off switch and a sensitivity range switch and it can be used as a studio light meter. It has a self-contained power supply, is portable, does not contain any electronic parts and requires no warm-up period. Price is $118 and additional details are available.

PROJECTING AND VIEWING EQUIPMENT

VICTOR ANIMATOGRAPH CORP., div. of The Kalart Co., Plainville, Conn., introduces a 16-mm action viewer. Specifications include a 3-element lens, a hooded 3¼x 4¼-in. viewing screen, focusing and framing adjustments, a built-in frame marker, a frame counter, an automatic lamp switch controlled by the film gate, and a 75-watt projection lamp. Price is $92. An Editor-Viewer consisting of the viewer, heavy-duty rewinds with tension brake and locking device, taking up to 2000-ft reels, and a splicer, all on a hardwood mounting board, is priced at $122.



WOLLENSAK 715 8-mm movie projector has new push button controls for forward, reverse, and neutral positions. Specifications include a rheostat speed control, still projection, 500-watt illumination with 750-watt lamp optional, automatic room-lamp accommodation, stainless-steel film retainers, swing-open gate for threading, instant tilt control, built-in storage compartment with three 400-foot reels, and case. Lens is a ¾-in. *f*/1.6. The projector comes with removeable self-contained film splicer. For further information, write Wollensak Optical Co., 320 E. 21st St., Chicago 16.

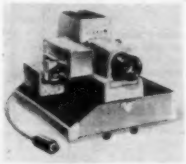
ULTRAMATIC W-2 is a slide viewer handling all 2x2 cardboard mounts in magazine loads of twenty or singly without magazine. It has a double system of lenses for 7X area magnification. The viewer uses as light source a battery-operated lamp housing, or alternately, an ac/dc housing with variable light control. Price, with

battery housing and one magazine, is $14.95; with ac/dc housing, $18.95. The ac/dc housing alone is $6.95, battery housing alone is $2.95. The W-2 magazine will fit all Ultramatic viewers and are priced at 50 cents each. A carry case is $5.95. Manufacturer is Airequipt Mfg. Co., Inc., 20 Jones St. New Rochelle, N. Y.

STER-E-O, INC., 1017 Pike St., Seattle 22, Wash., announces an improved model of its 60-slide stereo viewer, the hand-held 3-D Roto-Vuer. New features include a built-in rheostat for adjusting lighting brilliance and a semiautomatic switch. Price is $37.50.

OPTA-VUE 150 is a slide file for 2¼x2¼ mounted transparencies. It is impregnated with Film-Gard, said to combat film bacteria. The file has 12 compartments, holds up to 150 slides, weighs 9½ oz, and is priced at $2.95. An index card is contained in the lid and a strap is provided for carrying. More details available from Optics Mfg. Co., Amber & Willard Sts., Philadelphia.

EMDE PRODUCTS, 2040 Stoner Ave., Los Angeles 25, Cal., offers a new 2x2 aluminum-foil mask and ultrathin glass for mounting Super-Slide and 127 transparencies to be used in Airequipt magazine frames. Price of a box of 100 masks and 200 pieces of glass is $7.



ARGUS 500 is a 500-watt projector for 35-mm and Super-Slides. Light output is said to double that of 300-watt models. Price, complete with automatic slide changer, slide magazine, and two-tone carrying case, $79.50. A remote-control model, with push-button slide changer, is $96.50. Further details are available from Argus Cameras Div., Sylvania Electric Products, Inc., Ann Arbor, Mich.

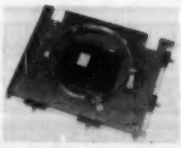
FLASH

HERSHEY "700" DELUXE electronic-flash unit is similar to the previous Model 700, but features a half-power switch, uses D-cells or rechargeable batteries, and a leather case is provided for the power pack. Price is $69.95. A kit of four nickel-cadmium batteries and a recharger is $29.95. Full details are available from Hershey Mfg. Co., 9212 W. Grand Ave., Chicago 25.

TAPE RECORDERS

WOLLENSAK 1500 is a dual-speed tape recorder that weighs 18 lbs. Operating features include speeds of 3¾ and 7½ ips, a two-level recording indicator, a simplified keyboard control, and an index counter. The recorder takes up to 7 in. reels and has a 10-watt push-pull audio output. Price, complete with ceramic type microphone, two reels (one with tape), and cords, is $189.50.

DARKROOM EQUIPMENT



OMEGA MASKING ATTACHMENT is another enlarger accessory for Omega D-2, D-3, B-4, B-5, B-7, and B-8 enlargers. It can shield up to 65 percent of the negative area and may be set to any desired horizontal, vertical, or square shape to aid in cropping, double-printing or montage printing. Price is $38. Manufacturer is Simmon Bros., Inc., 30-28 Starr Ave., Long Island City 1, New York.

UNIVERSAL COPY BRACKET with two C-clamp jaws that lock on almost any enlarger pole or other upright has been an-

You are *Automatically* an

EXPERT ON EXPOSURE

with the
FULLY AUTOMATIC
Minolta
AUTOCORD 'L'
2¼ x 2¼ TWIN-LENS REFLEX

featuring ULTRA-SENSITIVE COUPLED EXPOSURE METER

1. You aim the photo cell at your subject.
2. You read the number indicated by the pointer on the Light-Value Scale. (For example, 11.)
3. You set the aperture and shutter scales so that their special calibration numbers add up to the number you have just read. (For example 5 and 6 . . or 6 and 5 . . or 3 and 8 — depending on the need for a faster speed or a smaller f/stop. You can check the actual f/stop and shutter settings corresponding to these numbers through two windows on top of the viewing lens housing.)

THAT'S ALL
you are set for a perfect exposure through the magnificent ROKKOR lens!

Unlike some cameras that merely have a separate exposure meter tacked on to them, the fabulous new MINOLTA Autocord 'L' features an extra-rugged meter *coupled* to the camera mechanism to enable you to determine the correct exposure automatically With its super-simple direct-reading Light-Value Scale anyone is an expert on exposure — and it has every feature of the world-famous MINOLTA Autocord, too!*

$124.50

FULLY AUTOMATIC
Minolta AUTOCORD

. . . for those who already own a fine exposure meter and prefer to calculate their own aperture and shutter settings.

*Fully automatic film advance and shutter cocking • One-finger, single-stroke helicoid focusing • Famous ROKKOR 75mm 4-element f/3.5 coated taking lens • 75mm ROKKOR f/3.2 coated viewing lens • SEIKOSHA MFX fully synchronized precision shutter (1 to 1/500 sec. and bulb) • Brilliant Fresnel viewing screen • Super-simple diaphragm and shutter calibration in terms of light values

$99.50

fr

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New York Office.....150 Broadway, New York 38, N. Y.
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MINOLTA

TESTED 35mm RELIABLE

ASA 4000? Try the new 'miracle' ULTRASPEED film!
35mm DUPONT S-X PAN 20 exp. roll 70c

Nominally rated at ASA 300, good results are obtained at ASA 1,000 and 2,000. Popular Photography's editors report in the Aug. 56 issue of available light shots at ASA 4,000! S-X Pan has unusually fine grain and extreme exposure latitude—truly a film of the future!

20 exp. rel.	36 exp. rel.	27½ ft. bulk	50 ft. bulk	100 ft. bulk
70c—3 for $2.00	$1.00—3 for $2.75	$2.22	$3.78	$5.80

Daylight Loader with 100 ft. SX PAN $9.99

TESTED SAFETY KODAK B&W FILM

All three popular speeds, Panatomic X (Background X), Plus X and Tri-X are available in 27½ ft., 50 ft. and 100 ft. lengths and 20 and 36 exposure reloads.

PANATOMIC X; PLUS X (ASA 80); TRI X
27½ FT. $1.39 · 50 FT. $2.29 · 100 FT. $3.98
Shipping Charges 10c, 30c, 30c

B&W RELOADS in metal cartridges may be assorted
20 EXP. 40c ea. 6 for $2 · 36 EXP. 60c ea. 4 for $2
Ship. Chgs. 1 or 2 5c; 3 to 6 20c; 7 to 12 35c.

COMBINATION SPECIAL
Daylight loader with 5 cartridges and 100 ft. of Kodak Plus X or Tri X or Panatomic X, or 50 ft. of Adox or SX-Pan $7.99
Shp. Wt. 4 lbs.

ALL YEAR B&W ASSORTMENT
Daylight loader with 5 cartridges plus 27½ ft. ea. of Panatomic X, Plus X, and Tri-X. $8.88

NEW COLORFILM INCLUDING PROCESSING FOR ASA 400

Ansco's new superspeed color film, with Spiratone's exclusive superspeed processing produces excellent transparencies at speeds as fast as the fastest b&w films!

35mm 20 exp. incl. ASA 400 proc. ....ea. $3.45 — 3 FOR $9.95
120, incl. ASA 400 Proc. .... ea. $2.85 — 3 FOR $7.95

35mm Anscochrome, incl. ASA 32 proc. 20 exp., 3 for $6.50, 6 for $12.50.
35mm Super Anscochrome 20 exp ASA 100, 3 for $6.60, 6 for $12.60.
35mm Anscochrome bulk 28 ft., complete with Easyloader for daylight loading, 8 cartr., 16 oz. developing kit, exposure guide—all for $10.95.

35mm DAYLIGHT LOADER

INCLUDING 5 CARTRIDGES
$4.95 IF PURCHASED TOGETHER WITH MINIMUM OF $7.95 WORTH OF BULKFILM.

It's so simple to take advantage of the exceedingly low cost of 35mm bulkfilm and to load any desired length into a standard Eastman cartridge. First few reloads already make loader pay for itself. **Leader alone with 5 cartridges, $5.95.** *Sh. Wt. 4 lbs.*

DELUXE LOADER, with automatic counter, accepts also Leica, Contax cartridges — $10.95 or add $5.00 to Leader comb. offers.

FREE FILM TONGUE CUTTER with your order for $5.00 or more of bulkfilm, or $4.25 worth of bulkfilm plus loader. For perfect shaping of tongue to assure smooth loading. Must be requested at time of purchase.

Greater Savings than ever on FRESH SAFETY 35MM ADOX FILM IN CARTRIDGES AND BULK

Your choice of KB14, KB17, KB21 *Shipping Charge 10c*
20 exposure reload 50c; 3 or more (may be assorted) 45c each.
36 exposure reload 75c; 3 or more (may be assorted) 70c each.
50 ft. $3.49, 100 ft. $6.50—*Shpg. Chge. 25c per 50 ft.*
Daylight leader with 50 ft. Adox film $7.99

2 x 2 GLASS SLIDEBINDERS

- Comparable to 6c slidebinders.
- One of the finest methods of mounting transparencies (35mm Argus, Leica size) betw. glass!

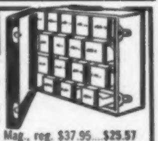
2½¢ ea. in Quantities

The biggest bargain in quality slidebinders ever offered. Pregummed Fibreboard, self-centering of slide, provision for type-on titles, dustproof, lintfree, shockproof—all these advantages are yours for less than the usual cost of glass alone! Why risk fingerprints and scratches on your irreplaceable color shots? 200 for $5.75.
Shipping Weight 5 lbs.

Sample package of 20 2x2 glass and 3 2x2 metal binders, postpaid $1.25
800 for $20.95 · 2400 for $60.00

200 singleframe (Mercury) Masks $1.75 } Masks fit glass
200 Square (Robot, Tenax) Masks $1.75 } & metal binders
2x2" cardboard mounts for single frame (Mercury size) transparencies 50 for 55c. *Sh. Wt. per 100, 1 lb.*

Save 40% on DELUXE LUGGAGE TYPE CASES FOR AIREQUIPT



Smart two-tone, sturdy, lightweight—the finest made
A6, hold 6 magazines, reg. $5.95....$ 3.57
Offer A66 — A6 case with 6 Aireq. Mag., reg. $19.45 .... $12.57
A24, holds 24 mags., reg. $10.95....$ 6.57
Offer A2412 — A 24 case with 12 Aireq. Mag., reg. $37.95....$25.57
Offer A2424 — A 24 case with 24 Aireq. Mag., reg. $64.95....$43.57
Shipping Weight, per six magazines, 8 lbs.

10 FT. CABLE RELEASE $4.49

with setscrew and booster spring

A sturdily constructed German cable for remote control work to operate with any Kodak or Compur type shutter. Imagine the many new possibilities this release opens up for you—whether you photograph wild animals, unsuspecting children at play or take a self-portrait, you'll find this release a valuable accessory. (Leica model add 25c.) *Shipping Cost 25c.*
Other long Cable Releases with setscrew:
40" $1.50 · 60" $2.50 · 20 ft. $7.95 · 40 ft. $12.49

FLASH DIAL

FOOLPROOF FLASHSHOTS EVERY TIME! 25¢ WITH YOUR ORDER FOR $3.00-WORTH OR MORE, MERCHANDISE

Metal dial, in leather cover, shows directly correct settings for all films, all bulbs, at all openings, all distances—without guide numbers, without figuring.
Even if your present flashgun has a dial, you will want this new, accurate, simple means of ascertaining perfect flash pictures.

SLIDE TRAYS for TDC, VIEWLEX

LOWEST PRICES EVER! 30¢ ea. in lots of 120

Changomatic, Projectomatic, Powermatic
Extra strong plastic trays, hold 30 cardboard and glass slides, intermixed, with index. *Shpg. Wts. 3, 7, 22, 50 lbs*

4 for	12 for	48 for	120 for
$1.95	$4.98	$17.95	$36.00

12 Trays in metal deluxe case, a $13 value ...$7.95 *Shpg. Wt 8 lbs*
Sturdy carry case for 12 *(Illustrated below)*.....only 50c extra

SLIDE TRAYS for REVERE 553, 555, 888

Sturdy trays, hold 36 cardboard and glass slides, intermixed, with index.
12 in carrying case. $8.95
12 in deluxe storage case, $13.49
Shpg. Wt. 6 lbs.

REVERE 888 SPECIAL: Remote Control 15 ft. Release plus 12 slide trays in Carry Case..........$12.49; in deluxe storage case..........$16.89
Deluxe Storage Case for Revere Trays, leatherette-covered. Reg. $9.95. Spiratone priced at $5.95

FREE with 12 trays or 6 magazines: 10 2x2" COLOR SLIDES or 36 exp. 35mm MICROFILE FILM.

3 UNIT REFLECTOR OUTFIT $5.99

- Two aluminum 10" reflectors for #1 or #2 bulbs
- One bullet reflector for spot effects

All three complete with swivel joint, switch, socket, clamp and cord . . . at a fraction of their usual cost. *Shipping Weight 7 lbs.*
SUGGESTION: 2 #2, 1 #1 photoflood bulbs 89c.

FREE with $5.99 or $7.89 outfit — **DIFFUSER SHIELD,** for flood and flash, sells everywhere for $1.44. Clips onto bullet reflector or flashgun for those beautiful soft portraits.

HI-LO DIMMER SWITCH $1.98

Compose and focus in comfort, save electricity, prolong bulb life, retain subject's natural expression. Nothing like it under $6.00. When bought alone $2.98.
IF BOUGHT WITH $5.99 or $7.89 OUTFIT

PHOTOFLOOD STAND PLUS TWO REFLECTORS

- 3-section metal stand extends 6'4".
- Sturdy, braced legs with rubber tips.
- Stand telescopes compactly to only 2 feet.
- Positive locking at any desired height.

2 #2 bulbs 79c

The ideal indoor lighting setup. 22" crossbar, can also be used to hold screen, backgrounds. Two-spun aluminum 10" reflectors (for #1 or #2 photofloods), complete with sockets, switches, 6' cords, ball socket swivel joints, rubber jawed spring clamps. Can be used on cross bar or furniture. *Shipping Weights: Stand 4 lbs.; Reflectors 4 lbs.*
$13 VALUE $7.89 COMP — New with new SWIVEL CROSSBAR
Extra clamp on bullet with bulb (for semi-spot) 1.90
Extra photoflood stand with regular crossbar 3.49

SEKONIC EXPOSURE METERS

SAVE 50% **SALE!** NOW YOU CAN BUY THESE FINE PHOTOELECTRIC EXPOSURE METERS AT TREMENDOUS SAVINGS.

SEKONIC Leader has ASA speeds 6 to 800, for openings f:1 to f:32, settings for stills and movies, also light value shutters. 16 page instr. booklet. Reg. $8.45.
$4.98 including leather ER case and metal chain

SEKONIC Compact has ASA speeds 10 to 800, for openings f:1 to f:32, fits into accessory clip of all popular 35mm cameras. For reflected and incident light. Reg. $9.95.
including leather case $5.25

Shpg. Chge. 30c per meter
These Sekonic Meters are slightly shopworn, but unconditionally guaranteed by importer.

CLOSEUP (Portrait) and EXTREME CLOSEUP LENSES

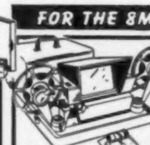
bring within EVERY photographer's reach subjects which would be too small if photographed at the regular 3 ft. closest camera setting: Head and shoulder portraits, children's pictures, copy work—a whole new field of picture taking.
With extreme closeup lenses, you can get as close as 8" with a Plus 4, 7" with a Plus 5, 5½" with a Plus 6, 3½" with a Plus 10. You can use two extreme closeup lenses, with a double retaining ring, for even more extreme closeups. With a Plus 5 lens, you can fill the complete 35mm frame when reproducing a postcard; a Plus 10 is just right for insects, stamps and coins. Extreme Closeup lenses make macrophotography possible with a tiny investment. All exc. Plus 10, mounted in metal rings.

	Series IV	Series V	Series VI	Series VII
Plus 1 (ctd.) (to 20")	$1.54	$1.94	$2.44	$3.34
Plus 2 (ctd.) (to 13")	1.54	1.94	2.44	3.34
Plus 3 (ctd.) (to 10")	1.54	1.94	2.44	3.34
Plus 4 (ctd.) (to 8")	—	1.75	2.00	3.25
Plus 5 (ctd.) (to 7")	—	1.95	2.30	3.75
Plus 6 (ctd.) (to 5½")	—	2.25	2.75	4.25
Plus 10 (ctd.) (to 3½")	—	2.65	3.25	5.25
Double Retaining Ring	.85	.85	.95	1.50
Leather Filterbank holds 6 filters, closeup lenses	1.00	1.00	1.25	1.50
If bought with $5.00 worth filters, closeup lenses	.50	.50	.50	.59

ALL CLOSEUP LENSES FIT STANDARD FILTERHOLDERS
Shipping Charges 1-4, 10c

SPIRATONE INC. 369 7th AVE. NEW YORK 1, N. Y.

FOR THE 8MM & 16MM MOVIE FAN



SAVE $20.00 ON BRAND NEW 8MM GIANT-SCREEN Action Editor $44.95

1958 MODEL
Sensational 4½x6" screen shows picture four times usual size, all metal, foldaway 400 ft. rewinds, automatic splicer, carrycase. *Shpg. Wt. 12 lbs.*

4 pc 8mm EDITING OUTFIT $10.95

A value like never before! SAVE $10.55
Outfit contains Projection Editing Viewer, with bulb, pair of rewinds with brakes, all metal splicer, all ready for simple mounting on board or table (not supplied). Can you afford to pass up such a value? *Sh. Wt. 6 lbs.*
Same outfit, but with automatic splicer $12.95

SUPER DELUXE 8mm EDITOR

$14.95 Same viewer rewinds as above, but with automatic splicer, plus metal base—a $26.00 5 pc. set. *Sh. Wt. 6 lbs*
Same outfit, but with new Folding Rewinds, for maximum compactness $16.95

8mm PROJECTION EDITING VIEWER $6.95

You'll more than ever enjoy editing your movies when you use this neat, all-metal, electric editing viewer. It projects a clear image on the groundglass, makes possible viewing from a comfortable distance.
Shipping Weight 2 lbs.

CINE TITLER

For 8mm & 16mm — REG. $5.95 — $3.59
SAVE 40%
Titles add action, provide continuity for your movies! Yet making titles is so simple with the Cine-Titler! Sturdy metal construction. Auxiliary lens for exact focus. Photograph picture postcards, titles of your own design: you can even shoot animated titles—an instruction booklet accompanies every titler.
If purchased at the same time as Action Viewer, Action or Super-Deluxe Editor
Shipping Weight 4 lbs.
Titler alone $4.64

8mm ACTION VIEWER

$16.89 — 16mm Mod $17.95
- Projects brilliant 2 x 3" pictures in full action on the built-in groundglass screen—not just one frame at a time, but in continuous motion.

A viewer which makes editing a real pleasure. Easy to thread, scratch-proof, scientific ventilation of lamphousing — really a blessing for movie fans with a limited budget who know they'd have to spend $40.00 and up for a viewer like it!
Sh. Wt. 4 lbs.

METAL REELS and CANS from 20¢

	REEL OR CAN	REEL OR CAN	SETS
8mm 200 ft.	11 for $2.95	100 for $20.00	6 for $2.99
8mm 300 ft.	9 for $2.95	50 for $15.00	5 for $2.98
8mm 400 ft.	9 for $3.49	50 for $17.50	5 for $3.49
16mm 400 ft.	8 for $2.99	50 for $18.50	4 for $2.89

Approximate Shipping Weight, per 5 sets. 5 lbs.

8MM POCKET TITLER and CLOSEUP DEVICE

$4.95 SAVE 50%
FREE WITH POCKET TITLER: 20 Titling Cards, 10 color slides!
Name make, model, speed lens or adapter when ordering. Shpg. Chge. 30c.

Makes any title on the spot, catches those otherwise impossible closeups of flowers, insects without any need to measure or focus, reproduces 35mm Kodachromes on 8mm film! Completely collapsible, with precision ground lens, the Pocket Titler screws directly into 8mm Brownie, or into Tiffen "C" adapter ($1.25 extra for any camera) or Ser. IV adapter.

SAVE 60% SALE IN FINEST QUALITY PROJECTION BULBS

300 Watt T8½, SC	reg. each $2.50	2 for	$3.25
500 Watt T10,	reg. each 4.15	2 for	4.15
750 Watt T12,	reg. each 4.50	2 for	4.95
1,000 Watt T12,	reg. each 6.05	2 for	6.05

Shipping Weight 2 lbs.

NEW MANSFIELD 2x2 and 2¼x2¼ SLIDEBINDER $2.59

For the cleanest, the most efficient way for binding slides between cover glasses (2 x 2 or 2¼ x 2¼), it's the new Mansfield Slidebinder. While glass sandwich is held in rubber-covered viselike arrangement, tape can be rolled freely and applied to glasses. *Shpg. Wt. 2 lbs.*

1958 MODEL ALL-METAL RANGEFINDER $2.95

Employs super-imposed image system for rapid, accurate focusing from 2 feet to infinity! All-metal construction, leather covering, modern styling. In feet and meters. **FREE: PLASTIC STORAGE CASE**
Shpg. Chg. 10c.

KING SOL SOLENOID $5.59 ppd

Assures perfect synch at all speeds with Graphic, Busch, Rollei — the professional way. Instructions for press camera installation supplied — others have mechanic install; also cable release model — no installation. Was $15.00! *Name Camera When Ordering*

SYNCH YOUR OLD CAMERA

- Fully adjustable mechanical tripper, requires no installation, works through standard cable release socket of most old cameras. Has fitting for standard flash cord.
- Allows adjustment for flash bulbs and zero (X) delay for Strobe.

$2.49 PPD. *Incl. Leather Case*
Ship. Wgt. 2 lbs.
Tripper with BC Fan Flash, with ejector, tester $6.95

Spiratone Specializes in... Twinlens Reflex and Saves You Plenty on Camera Accessories

FIELD LENS $2.00

A SENSATIONAL SPIRATONE EXCLUSIVE WORTH 2½ TIMES AS MUCH

SAVE 60%

A flat thin Fresnel ring plate which fits over groundglass in your reflex camera, greatly increasing brilliance of viewing image, making the often almost invisibly dark corner image ten times brighter! No installation—just drop fieldlens onto groundglass. Postpaid.

Deluxe Field lens with clear centerspot for easy focusing $2.49.

For Rollei, Grafler '22', Ciroflex, Yashica, Minolta, all others

35MM ADAPTER FOR ALL TWINLENS REFLEX CAMERAS

SAVE 40%

Without installation, the Junior Minidapter enables you to use 35mm film in your 120 Rolleiflex, Rolleicord, Ciroflex, Graflex 22, Minolta, etc. —yet, you can change back to your regular size any time you wish. Minidapter comes complete with groundglass mask, cartridge adapters, counter, ready for use. *Shpg. Chge. 15c* **$3.95**

SR. MINIDAPTER has additional finder (for vertical and horizontal shots), special bracket for finder and counter. REG. $9.95 ..... **$5.95**

PARALLAX CORRECTING CLOSE-UP SETS

BOTH for $5.79 **$2.95** EA.

Perfect portraits and close-ups every time — sets fit cameras without any adapters, are guaranteed to equal $20.00 sets in performance. #1 set focuses from 38" to 20", #2 set from 20" to 13". Low $2.95 price includes 2 close-ups lenses, prism. Leather case, single 39c, double 69c.

Coating of taking lens — 50c extra per set *Shipping Charge 10c*

BAYONET MOUNT for Rolleiflex (f:3.5) Rolleicord Minolta Autocord Yashica C, LM
SLIPON MOUNT for Ciroflex, Yashica A Graflex 22

PARALLAX-ADJUSTER FOR ALL TWINLENS REFLEX CAMERAS

Sh. Chg. 20c **$1.98** Compensates for difference between viewed and exposed images — works even with extreme closeup lenses!

135mm f:3.5 PRESET TELE $29.95

for Kine Exakta, Praktica, Praktiflex, Contax S, B, BA, Pentacon.

Never before was there a value like this! These famous make lenses are faster than most (you'd usually get an f:4.5, if you pay under $40), have expensive helical focusing, an excellent hard coated, color corrected four element optical system; a pre-set diaphragm; and, because they are 'true' telephoto lenses in design, are short and light in construction!

COMBI. OFFER — 135mm f:3.5 preset, plus 35mm f:3.5 ctd., color-corr., pre-set widtangle—both for only **$69.95**

135MM Leather Pouch $1.98
35MM Deluxe Lens Case $2.00

Shpg. Chge. per lens, 75c.

225MM LENS CONVERTER, WHEN BOUGHT WITH 135MM 3.5 LENS **$8.95**

save up to 50% on brand new LENSES and ACCESSORIES for...

	EXAKTA	PRAKTICA PENTACON etc.	PRAKTINA
Ihagee-type 2 in 1 adapter	$4.95	X	X
Ihagee-type hinged Microscope Adapter set with tubes	13.95	$13.95	$14.95
Metal Rear or Body Cap	1.00	1.00	1.75
Screw-in Filters for most automatic lenses, state color	4.98	4.98	4.98
28mm f:3.5 Ctd., Preset WA	83.95	83.95	X
35mm f:3.5 Ctd., fully Automatic WA	55.95	X	X
135mm f:3.5 Ctd., fully Automatic Tele	99.50	99.50	X
135mm f:3.5 Ctd., Preset Tele	29.95	29.95	49.95
250mm f:5.5 Ctd., Preset Tele	64.95	64.95	69.95
400mm f:5.5 Ctd., Preset Tele	99.95	99.95	109.95

CLEARANCE SALE ON FINEST QUALITY METAL EXTENSION TUBES

SAVE UP TO 75%

Sh. Ch. per set 15c

- 5 pc. Set, 3 tubes, 2 brass adapters, for Kine Exakta, Exa, reg. $9.95 ..... **$4.98**
- 3 pc. Set, for Praktica, Praktica, Pentacon, Contax S, reg. $5.95 ..... **$3.98**
- 3 pc. Set, for Leica, Canon, reg. $5.95 ..... **$3.98**
- FOCUSING TUBE, incl. adapters, for Kine Exakta, Exa, reg. $9.95 ..... **$5.95**
- FOCUSING TUBE for Praktiflex, Praktica, Pentacon, Contax S, reg. $9.95 ..... **$5.95**

COILED FLASH CORD $1.98

- **Now available for most shutters.** *Sh. Chg. 10c*
- **Coiled cord extends to 5 ft., yet coils up without effort to only 7".**

So handy when you want to hold flash away from camera, place electronic flash closer to subject than camera! Available with stand-, and polarized household type plug for Heiland, FR, RI, Graflex, etc., and prong-type for Kalart to fit Compur, Prontor S, ASA (Kodak), Solenoid, Argus C3, C4, C44, Realist, Praktiflex, Exakta, most other synchro. terminals.

NEW COILED CORDS: Rollei Lock, Nikon S-2, Canon, Leica 3F, 3G, M3, Signet 40. **$2.25** *Name gun, camera when ordering*

NEW WINTER 1957-58 CATALOGUE C-5. Order yours today. Only 5c per copy—10c back on first purchase! Contains a wealth of interesting accessories at fabulously low prices!

Name your camera when ordering — many other accessories in this advertisement (cable releases, gadget bags, tripods, etc.) also well suited for your Twinlens. If in doubt, write us!

AUX. TELEPHOTO & WIDEANGLE LENSES

for Rollei (except 2.8), Ciroflex, Graflex 22, Minolta, Yashica, Ricohflex, etc. **$16.95** OR $29.95 FOR SET in double leather case

Focus, compose on groundglass — no guesswork! Lenses fit like filterholders, no installation. Coated, color-corrected — no exposure increase needed *Shipping Charge, per lens, 25c*

35mm WIDEANGLE LENS $39.95

A SPIRATONE EXCLUSIVE

Superb, coated, color-corrected lenses which ordinarily sell for double and more! Fast f:3.5 speed, all metal barrel, wide 64 degree angle.

With clickstops, rangefinder-coupled for Canon, Leica (for M3 $5.00 extra). With pre-set diaphragm for Exakta, Exa, Praktica, Praktiflex, Pentacon, Contax, S,B,BA etc. **$39.95**

35mm f:2.5 pre-set for Exakta, Praktiflex, etc. **$39.95**

Leather Case $2.50 *Sh. Chge. 75c* **$49.95**

Spiratone is Proud to Offer the Widest Selection of

FAN TYPE POCKET FLASH GUNS

All have collapsible fan-type reflectors, making for extreme compactness, without any loss of reflector efficiency! Every model accepts standard bayonet base (No. 5, SM, etc.) bulbs, comes with flashcord for German or ASA bayonet shutters!

- 'Economy' Model, uses penlite batteries, with ejector **$2.99***
- 'Standard BC' Model, similar to Economy, but with popular BC Condenser **$3.99***
- 'Deluxe BC' Model, has larger reflector than standard, and bulb-battery tester built-in **$4.99***
- 'Super Deluxe BC' Model, has all the features of Deluxe, topgrain leather case, interchangeable cords **$5.99***

For use of guns on Exakta, Praktica, Leica M3, Argus C3, C4, Realist—add $1.00. Standard flashbracket, fits any gun—$1.00; deluxe adjustable bracket $1.75; BC battery for BC models, lasts year $1.00.

*EXTRA LONG COILED CORD, wonderful for off-the-camera bounce flash—only 39c extra.

Shipping Charge 35c — Name camera when ordering!

Pocket-Style, Dual Purpose POLE-TRIPOD

C-3 **$7.95**

The ultimate in versatility — center pole rises almost 10", making total height a tall 54" — yet tripod telescopes to 13" pocket size—5 sturdy metal sections, top ribbed for elegance—rubbed tips prevent slippage —positive lock for elevating pole in any desired position.

Switch camera platform to bottom of pole and you have a perfect copying stand, titler and closeup tripod—for tabletops, flowers, copying!

If you don't have a tripod, this is it! If you own a heavy tripod—here is the ideal portable one, without loss of versatility!

FREE with Pole Tripod: Deluxe Panhead, selling everywhere for $3.00 *Ship. Wt 4 lbs.*

Top Grain Cowhide JUMBO PRESS BAG $15.89

16"x 11"x 6", the size bag you expected to pay $50.00 for! And made of a beautifully finished topgrain cowhide, too! No zippers—just bend cover back and everything becomes accessible. Felt-covered adjustable partition, imported hardware, long shoulder strap, attached to strap around bag for easy carrying of tripod. *Shpg. Wt. 6 lbs.*

ECONOMY SIZE, 11" x 9" x 6", same construction as above 10.49

MAGNIFYING HOOD $2.95 PPD.

FOR ALL TWIN LENS REFLEX CAMERAS

SAVE 45%

Twin magnifier makes possible accurate focusing and composing of entire groundglass image with BOTH EYES and at comfortable distance, while protecting groundglass from glare. Saves eyestrain, helps accuracy, dim light focusing. Instantly removable and collapsible. For Rolleis, Graflex 22, all others

COMBINATION OFFERS: Magnifying Hood plus deluxe Fieldlens ..... $4.59; Magnifying Hood plus split-image rangefinder $4.99

NOW—for the Twin Lens Reflex Fan SPLIT-IMAGE RANGEFINDER

IN FOCUS / OUT OF FOCUS

- For Rolleiflex, Rolleicord, Ciroflex, Graflex 22, Minolta, Yashica.
- Breaks straight lines at an angle until perfect focus is reached.
- Wonderful for poor light focusing.

Rangefinder is built into groundglass which replaces your present groundglass. Complete instructions supplied, simple installation (or your local mechanic can do it at nominal cost). A "must" for the photographer who insists on perfect focus. REG. $5.95 **$2.98** PPD.

5 FT. COILED FLASHCORD $2.35 PPD.

For New ROLLEI with lock, Minolta, Graflex 22, Yashica *Name your gun when ordering.* SAVE 40%

BAYONET COATED FILTERS

SAVE 30%

For Rollei F:3.5, Minolta Autocord, Yashica ea. $2.98—3 for $8.49

Your choice of red, green, yellow, 82A, 80B, 85C, Skylight.

Special Square Bayonet Shade $2.98

For critical LEICA, CANON owners

SAVE 40%

UNIVERSAL ZOOM FINDER 28mm to 135mm **$17.95**

LATEST 1958 MODEL

For Leica, Contax, Argus, instantly shows correct lens to use! Parallax-corrected. *Shpg. Chge. 35c*

FREE Leather Case with Zoom Finder

35MM F:3.5 WIDEANGLE, CTD., COLOR-CORR., RF COUPLED, CLICKSTOPS, (Leather Case $2.00 extra) **$39.95**

SYNCH YOUR OLD LEICA, CANON FOR FLASH OR STROBE

$3.49 PPD.

No installation—just one quick adjustment over release button and you are all set for flash shots at speeds to 1/30th. Tripper accepts standard flashcord—or buy from us with flashgun to fit accessory clip.

Famous GEISS KONTAKT, synchronizes Leica IIIA, IIIC, cameras even at high speeds, was $19.95 $6.95

Fan-type BC Pocket Flash w. tripper $8.39; w. Geiss $11.79

Shipping Chge. 35c

BC Batt. $1.00

SAVE 50%

LEICA M-3 ADAPTERS

for 35mm, 50mm, 90mm, 135mm Leica-Canon Lenses **5.00** each

Focusing GROUNDGLASS for LEICA, CANON

$4.95 Permits checking of lenses, composing, focusing for closeups.

COMB. OFFER: Focusing Groundglass + Focusing Extension Tube for Leica, a $15. valve **$10.50**

Focusing Tube, calibrated to show correct subject-to-lens distance for small objects **$5.95**

SAVE 40%

Deluxe Metal CASETTE

2 for $4.15 ppd. 5 for $10.00 for all Leica models incl. M3

ACCURA REFLEX HOUSING for LEICA, CANON $39.95

Shpg. Chg. $1.00

READY TO USE—WITH DUAL RELEASE SYSTEM *exc. M3

Never before could so small an investment change your Leica, Canon into a single lens reflex camera, ideal for parallax-free closeup, telephoto, medical and scientific work! Focus with formerly impossible fraction-of-inch accuracy through adjustable magnifier on bright, curved groundglass, press release: mirror jumps up, exposure is made of exact image you saw! Use with extension tubes or bellows for closeups, with special 135mm tele lens for complete closeup to infinity range.

SAVE MORE STILL BY BUYING COMBINATIONS

REFLEX HOUSING

- *Folding Bellowscope** (*Save $30.00!*) 49.95
- *Folding Bellowscope** and special Ctd. 135mm f:4.5 telephoto with 185mm lens converter 77.90
- **Duo-Track Model $5.00, Bellowsmat $10.00 extra.

FREE with any combination offer above: New Eyelevel Mirror device, a $14.00 value.

All prices include excise tax. Postage and insurance MUST be prepaid, even when no shipping weight is stated — overpayment will be credited in full. Everything listed is brand-new (unless otherwise stated) and fully guaranteed against defects. 25% deposit on C.O.D.'s. Items marked 'Free', 'Premium' or 'Bonus' MUST be requested at time of purchase. Foreign orders welcome — allow for extra handling charges. When ordering accessories, be sure to name your camera, lens, shutter!

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- *Read It From the Front or Reverse Side*
- *Unique in Design—Sensationally Priced*

THE NEW

SEKONIC L-21

Photoelectric EXPOSURE METER
For Both Incident and Reflected Light

Well, it's happened! SEKONIC (because they have the know-how and foresight) now brings you a meter with features that even the luxury instruments don't have! And for only $14.95! Words and pictures can't do the L-21, justice! It introduces you to a new world of exposure accuracy! It delights you with its unusual, unique design! You've never seen, used, owned any meter like it! SEKONIC is the new world standard-bearer in the exposure meter field—the L-21 proves it!

Complete with Incident Light Attachment, Leather Case and Neck Strap. Ask for the L-21 at Your Nearest Photo Store.

Sensationally Low Priced at..... $14.95

Here Are The More Important Specifications:

- Built-in Booster automatically adjusts the pointer for low-level and high-level illumination
- Plastic guide-lines window permits readings from front, top, or reverse side
- Unique in design, the case is made of unbreakable, clear-white plastic—a real conversation piece
- Direct readings for 100 ASA rated films. Also incident light readings when desired
- Accurately calibrated dial for ASA ratings, 6 to 6400; shutter speeds from 60 seconds to 1/1000 second
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- Newest advanced design water-proofed photoelectric cell, combined with highly sensitive, shock-resistant microammeter
- Moreover—it's extremely easy to use. And it can be used for every known photographic application
- Unconditionally guaranteed against defects in workmanship and materials

SEKONIC L-21

Distributors:
Brockway Camera Corporation, 1114 First Ave., New York 21, N. Y.
West, Alaska and Hawaii: Ponder & Best, Inc., 814 No. Cole Ave., Hollywood 38, Calif.
Servicing: Kanematsu-Sekonic Service Dept., 150 Broadway, New York 38, N. Y.
Canada: W. CARSEN & CO. LTD., Toronto

nounced by Photographic Importing and Distributing Corp., 67 Forest Road, Valley Stream, N. Y. A reversible tripod screw accepts either American or European-threaded tripod sockets. The Copy Bracket retails at $9.95.

1670MFA is the name given a glassless rapid-shift roll-film negative carrier available in 100-ft spools for film sizes from 16- to 70-mm. Designed for use with the Beseler 45 enlarger, a coupled release device automatically releases pressure on the film during advancement. Priced at $89.95 (add $4 west of Denver), more details are available from the manufacturer, Charles Beseler Co., 219 S. 18th St., East Orange, N. J.

LABOX, a daylight-loading tank, is introduced by Spiratone, Inc., 369 Seventh Ave., New York 1. The tank accepts all 35-mm cartridges in 20- or 36-exp. lengths and requires 6½ oz of solutions. Price is $7.95. A complete 12-piece traveling outfit in a 10-in. plastic container is available at $11.95.

TRIPODS AND ACCESSORIES

ACCURA RISOMATIC is an 8-section elevating tripod with leg stops to prevent over-spreading and a crank-operated elevator that is reversible for tilting, table-top, and close-up photography. It collapses to 11½ in. and extends to 52 in. Basic model, without a head, is $11.95. Distributor is Accura Industries, 150 Broadway, New York.

TRIPOD LEVELING HEADS have a floating camera base which can be locked in any direction, up to about 15 degrees, to offset sloping or uneven ground. It can be used with 35-mm, twin-lens reflex, and other small cameras. Price is $12.95. For larger cameras, another head is available at $27.95. For accurate level control, a spirit level is available fitting the camera's accessory shoe. Price is $4.95. Distributor of these Linhof products is Kling Photo Corp., 257 Fourth Ave., New York 10.

PROCESSING SERVICE

TECHNICOLOR CORP., 533 W. 57th, N. Y., is now packaging transparencies processed in their labs in plastic storage boxes which incorporate a recessed, convex magnifying lens in the base for viewing the slides. Processing charge is $1.50 for Kodachrome, Anscochrome, or Ektachrome films, through Technicolor dealers.

BLACK-and-WHITE custom developing service by Pictorials Labs., Inc., 16 E. 42nd St., New York 17, now includes poly-vinyl plastic-sleeve wallets for storing negatives. They are returned with your negatives at no charge with each roll of film developed. Brochure explaining the service available upon request.

PUBLICATIONS

ILFORD INC., 37 W. 65th St., New York 23, now has available a complete reference library covering Ilford products. A two-volume set, *Ilford Technical Information Book*, contains complete technical data on the products and their uses. Price is $3. *The Ilford Manual of Photography* treats all types of photo techniques in theory and practice. This 472-page book is also priced

(*Continued on page 172*)

New 16mm Electric Eye camera! Uses economical 100-foot roll film. Has automatic film threading, reserve power dial, remaining film footage counter plus 5 shooting speeds. 240-EE with f/1.9 wide-angle lens, $329.95.

All those in favor of easy movies say **"Electric Eye"!**

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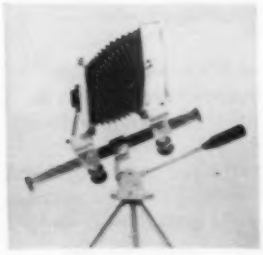
Match the camera tilts and swings with the right picture.

A_____

1

B_____



2

C_____

3

D_____

4

(*Answers on page 135*)

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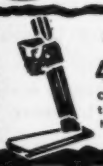

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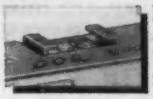
a couple have MFX Flash Synch, but . . .  Ricoh has Built-In Wireless MFX Clip-On Flash Contact for **SUPER CONVENIENCE!**

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WE ASKED THE PROS—

How do you get your subjects to relax in front of your camera?

PHILIPPE HALSMAN

The only real means of getting persons to relax is through your conversation with them. You must remember that almost everyone is self-conscious. This means you must find a subject of conversation which is interesting enough to make the sitter forget this self-consciousness. I have found that usually the thing of most interest to a person is himself. So, by talking to subjects about themselves and not being afraid to use film, it is possible to get them used to the taking of pictures and interested instead, with the conversation of the photographer.

ED WERGELES

I don't think there is any formula for making persons relax, but there are certain techniques which help. To start with, find out everything you can about your subject. With this information, you can get him interested and talking about something he is familiar with. When this is done you can often shoot without the subject even realizing the picture is being taken. Another thing is to try to get people when they are away from their work. That way, they are not preoccupied with other things and will give you complete attention.

LARRY FRIED

I think the most important thing when working with people is to get as friendly as possible with them before starting to shoot. For me, one of the best ways of doing this is by finding a subject they are interested in and getting them talking about it. Also, I have often found people are shocked if I walk up to them and stick a camera in their face for a close-up at the beginning of a shooting session. I try to either work a little farther back by using a short telephoto, or make medium shots with a normal lens till they get used to the camera.

BRADFORD BACHRACH

Primarily, I photograph women. I find the best way to get them to relax is by first making them feel they are in the hands of someone who is competent to make a good picture of them; secondly, that the person doing the shooting is more interesting than the camera. Often, this feeling of confidence starts with the suggestion of the proper clothes for the sitting. It can be reinforced by noting and playing up the subjects' best features, and by talking with them about something with which they are familiar and are interested in.

Photographs by Harvey Shaman

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With Precision f/3.5 Coated Lens

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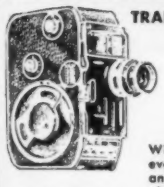

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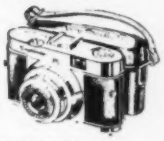

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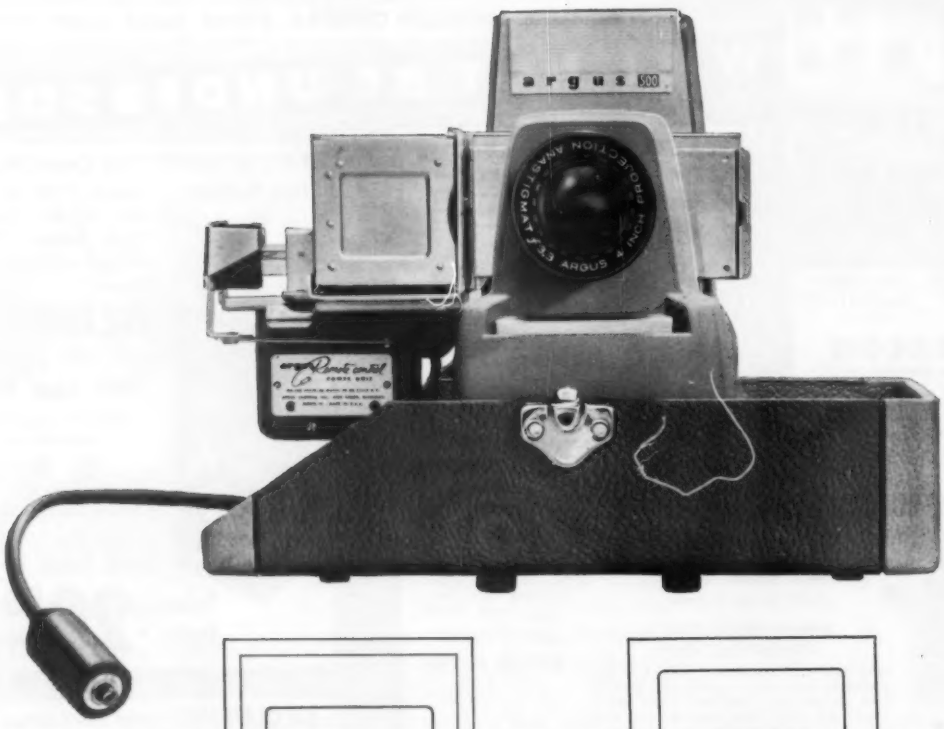

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STEREO TODAY

by Robert L. McIntyre

Matching Lincoln Pictures

Students of Lincoln lore interested in stereo have been playing a fascinating game of matching Lincoln pictures for over a decade. Now you can see and show some of the results of their labors. A set of ten Lincoln slides, cardboard mounted in today's stereo format, has been made available by Frederick Lightfoot, 195-17 100th Avenue, Hollis 23, N. Y. It costs $2.95 postpaid. What has made the search so exciting is the fact that only a very few 3-D pictures of Lincoln were taken with regular stereo cameras. Others exist, nobody knows how many, because he was photographed more often with four-lens *cartes-de-visite* cameras. Such cameras were employed to take pictures of celebrities, four at a time, for fast, economical production. Prints were made and cut up to make individual pictures of calling-card size, sold as souvenirs at very low prices. It happens that each pair of lenses of the *cartes-de-visite* camera took a fine stereo view with inter-lens distance of about 2¼". Thus stereo pictures can be created by bringing together the right pairs of prints.

Some pictures taken as *cartes-de-visite* were printed later as stereo pairs. Others may never have been viewed in stereo until the collectors brought them together again. The story of this search is documented by Lightfoot in an article which appears in the February, 1957, issue of *Image*, journal of George Eastman House. Stereo views assembled in this manner have been shown before club groups by A. E. Bachelet of New York and Carl Balcomb of Akron, but the set which Lightfoot has gathered from various sources is the first to be made available to the public in modern stereo format. In addition to *cartes-de-visite* stereos it contains some conventional 3-D views. One is a rare shot of Lincoln with Gen. McClellan and his staff before a tent at the battlefield of Antietam, headquarters of the Army of the Potomac. It is reproduced above.

Newton's Rings Roundup

Slide makers in stereo and other fields of photography have a problem in common. It's Newton's rings. They appear as a series of concentric lines forming a variety of patterns. Each line is a miniature spectrum, separating the light into its component colors. Viewed as a whole, a Newton's-ring pattern is not unlike the thin oil slick you sometimes see on the water where boats have been refueled. It's a colorful thing, but often appears where you don't want it.

There are several ways of getting rid of Newton's rings but none short of using no glass at all is as easy and effective as binding your slides with Newlo Anti-Newton Ring Glass, a European invention becoming available at camera stores through the distributorship of Optics Manufacturing Corp. of Philadelphia. It is slightly more costly than regular slide glass, but you only need one piece per slide. For additional economy you can reserve it for mounting only pictures likely to cause trouble. Large areas of smooth, light tones provide backgrounds against which Newton's rings stand out. The sky of the accompanying White House view is a typical example. To understand how this new glass works, let's take a look at the cause of Newton's rings.

When you mount a piece of film its shiny, backing side is held very close to the polished-glass surface. Light is reflected by the film backing and also by the adjacent glass. Under these conditions "interference" occurs. Some rays reflected by film and glass get together and reinforce one another. Alternate rays cancel each other out. The result is sort of a topographical map of the air space between film and glass, with lines of color connecting the points where their separation is equal. The effect can be avoided by keeping the offending surfaces a few thousandths of an inch apart, or by rendering either of them nonreflective.

Newlo glass employs the latter principle. One side has the normal, bright reflecting surface. The other appears dull. It is etched to create an over-all pattern of shallow, dished-out depressions with curved sides. The film is supported by the rounded peaks between these depressions. Since there is no flat surface, the reflections which cause Newton's rings are eliminated.

Bumps and Dimples

The search for methods of avoiding Newton's rings is an old one. They occur much more frequently when the film has a strong curl, backing side out. To remove the curl, more patient photographers reverse-roll their film with backing side in and leave it that way a day or two before mounting. Another approach is to increase the backing-to-glass separation by inserting an extra mount in the binder, or by employing strips of tape for the same purpose.

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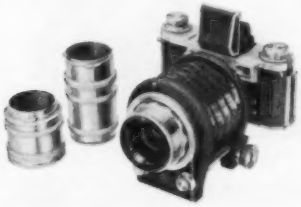

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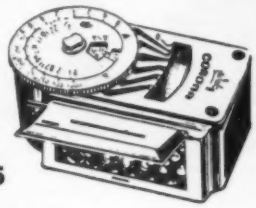

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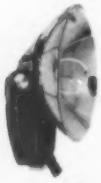

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out by C. Allen Morrow, Chicago professional slide binder. He uses a fixture to press dimples in Emde stereo masks, near the four corners of each picture aperture. This creates little bumps in the side of the mask next to the glass, holding the film off far enough so the phenomenon does not occur.

You might expect some loss of sharpness and brightness when Newlo glass is used with its etched surface in contact with the film. Theoretically, there should be—but it isn't enough to see. Our tests were made with pieces of glass cut in half to cover one stereo picture with Newlo and the other with regular glass, selecting slides with particularly strong Newton's rings for remounting. Except for elimination of these patterns, no difference was observed either in the hand viewer or on the screen.

Show for Viewing

The audience is an important part of the Chicago Lighthouse Stereo Exhibition, sponsored by Chicago Stereo Camera Club and Lighthouse for the Blind. It began as unique entertainment for the charity's annual banquet, which it still provides. In addition, there now are four benefit showings open to the public. This year's exhibit will be presented at 3 and 8 p.m. on December 7 and 8 in the Engineering Building, 205 W. Wacker Drive. If you would like to see how your slides stack up in competition, there still is time to enter. Closing date is November 16 and entry blanks can be obtained by writing Frederick T. Wiggins, Jr., APSA, exhibition secretary, 438 Meacham Ave., Park Ridge, Ill.

Chiaroscuro—the Easy Way

There's a mighty fancy word you hear once in a while in pictorial circles. It's *chiaroscuro*—and it means the distribution of light and dark areas within a picture. Black-and-white abstracts and pattern shots are loaded with chiaroscuro, and it's more important in them than the identity of the subject matter itself. Stereo is so real its subject matter almost always is important, but so is chiaroscuro, for all of that. You don't have to get involved in theories of composition to see how it can affect 3-D pictures.

We always find it more pleasant to look from darkness into light. The theater, for example, creates an ideal viewing situation. Everything is in shadow except the stage, where the interesting action occurs, and it is brightly lighted. The stereo viewer or the silver screen in a darkened room provides similar conditions. Pictures are easier to explore if they, too, provide an opportunity to look from shadows into light areas.

Using this principle can help us show scenes at their best. The stereo photographer frequently has to search for a foreground object that will enhance the depth of a scene. If it's medium- to dark-toned, that's all to the good. If it turns out to be the brightest thing in the picture, though, it may steal the show. A pleasant vista, framed by a white archway, may emerge as a picture of the archway alone with the view that might have been interesting obscured in its background.—

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Photo of Steve Allen—Star of the Steve Allen Show (Sun. 8-9 PM, EST, NBC-TV)—by Sid Birns, United Press Staff Photographer who hails NYI training for his success on the job.

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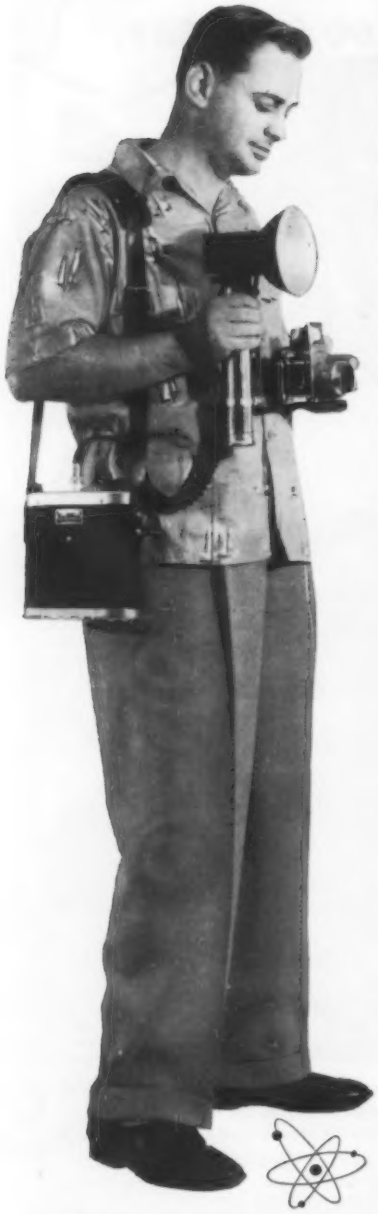

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MONEY-MAKING IDEAS

HOW TO MAKE YOUR HOBBY PAY OFF

Last month in this space, some of the ways amateurs make their hobby of photography at least pay its own way were listed. Quite a few readers are probably interested not only in these ways of developing opportunities in their immediate locality, but also in seeing their photographs in print. Let's glance at this and its income possibilities.

There are nearly a thousand magazines looking for pictures, and newspapers, advertising agencies, and the organizations which require publicity make up an even larger potential market. A great many of the magazines and newspapers, of course, pay very little—$3 to $5 per print is quite common. Larger, nationally circulated publications may pay ten times this fee, as will some of the advertising agencies. Most of these markets are really eager for photographs and watch the incoming mail very carefully.

next month: 4 ways of making money in your own neighborhood

Fighting the odds. The percentage of usable pictures which comes in unsolicited, however, is very small and all of the mistakes can be illustrated in every mail. The majority of envelopes which come in contain photographs which are technically too poor to reproduce well, are completely inappropriate in subject matter and treatment for the editorial content and policies of the magazine, or are the amateur's direct imitation of the pictures he saw in the current issue. The photographer who avoids these particular errors stands out from the competition. He may even receive a letter and some direct encouragement and guidance on future submissions.

Most of those whose prints are in the same mail with yours will not have looked at their work with a really critical eye and asked themselves, "Is this a sharp, full-gradation print on glossy (or at least smooth-surfaced) paper? Will it tell a clear story to a stranger? Does this editor ever print this kind of subject matter? If so, is this a repetition of a theme he used in a recent issue?" An honest answer to these questions would decrease an editor's mail by at least three quarters.

Pick markets with care. The biggest handicap imposed on themselves by those who can make technically good photographs is submitting to the wrong markets. It pays to study the magazine whose requirements you hope to meet and to list the pictures each has published in the last six issues: subject matter, approach, and "mood." These will differ surprisingly even between magazines in direct competition for the same audience. The problem may be approached from the other end, of course. If you have found your own natural bent and subject matter, search for all the markets which might use your kind of work. The only really complete list of markets in print today is the one in the book *Where and How To Sell Your Pictures*, by Arvel W. Ahlers, which was reprinted in the 1957 PHOTOGRAPHY DIRECTORY.

I hope your letters will recount some of your successes (and misadventures, too) in breaking into print. I can't answer them directly, but they will be the basis for choosing future column topics—and perhaps bring you a few dollars (see below).

$ $ $ • $ $ $

Some "case-history" high spots: a G.I. student, a newcomer as I was to the Rocky Mountain city where I taught photography, came to class after a few weeks with a full-page newspaper reproduction of a group of his photographs—the city after dark seen with fresh eyes. He repeated this feat a half dozen times during the course. Initiative doesn't spend all its time listening to lectures.

$ $ $ • $ $ $

A little over a year ago, a friend showed me snapshots of his child—gray, static, and pretty boring. He joined a lively camera club and last Christmas season caught a street scene which one of the large charitable service organizations liked when he sent them a complimentary print. He showed them others, did several assignments for them after his nine-to-five office hours. He built a portfolio, found assignments from other service organizations, as much for the experience as for the modest fees. Armed with these, he walked cold into one of the largest advertising agencies, sold two prints and was later given an assignment. He's holding his job, buying good equipment with the proceeds of his sales, and building his skill. This kind of program doesn't require a New York City address.

$ $ $ • $ $ $

Another, and even younger, photographer who drops around for coffee in the evening occasionally, began outside New

(*Continued on page* 126)

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1½" f:1.9 Tele, Foc.	29.95	17.95
1½" f:2.5 Tele, Foc.	19.95	12.95
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6.5mm f:1.9 W/A, Foc.	49.95	24.95
7mm f:2.5 W/A F. F.	19.95	13.95
1" f:0.95 Std. Foc.	175.00	129.95
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3" f:1.5 Tele, Foc.	89.95	59.95
3" f:2.5 Tele, Foc.	42.50	23.95
3" f:1.9 Tele, Foc.	49.95	32.95
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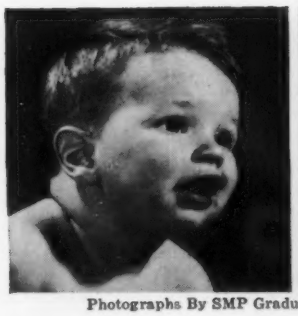

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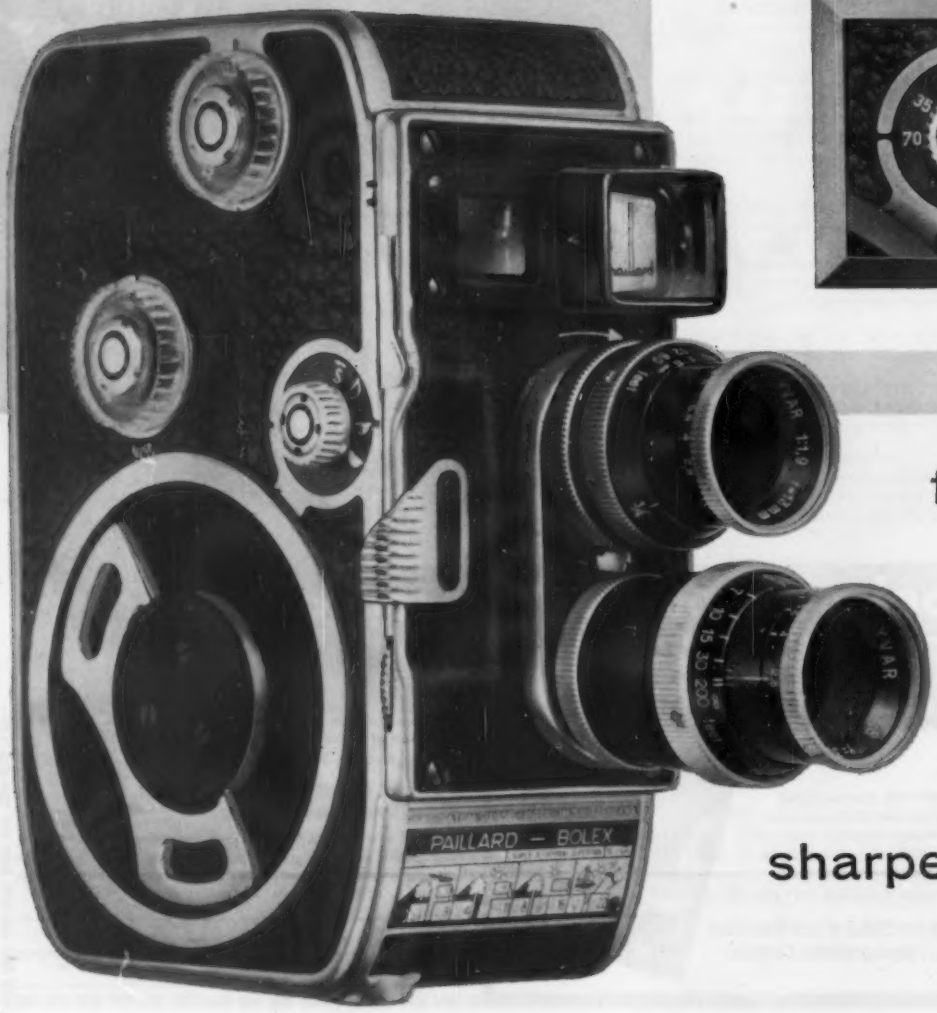

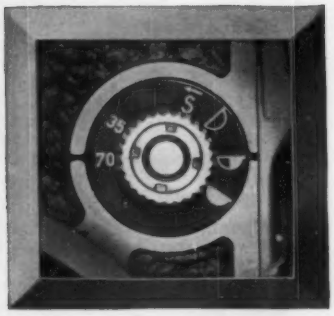

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The Range

Editorial

Pointless quarrel

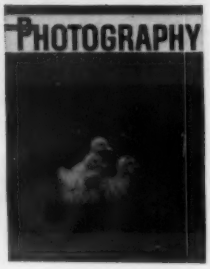
There is an old-fashioned feud fuming in the pages of the *PSA Journal* these days, with spokesmen for two factions of the Photographic Society of America calling each other names. The old-guard pictorialists have accused the color photographers of responsibility for the current decline in club popularity of black-and-white photography, and the color clan, notably through the mouthpiece of Robert W. L. Potts, APSA, has struck back with the clarion command: "Gentlemen, lie down, you're *dead!*" Both italics and exclamation point are Mr. Potts', whose July issue diatribe sizzled with recriminations.

It is true that across the country camera clubs are having trouble maintaining interest in black-and-white photography, and that the simplicity of color, coupled with time-hogging television, has put many a darkroom out of operation. Naturally, the Old Guard, which has had its way for years, doesn't like what is happening and its point of view was expressed in the previous *Journal* article by Fred Hendee, who regarded color photographers as inferior to black-and-white darkroom workers.

All this is nonsense, of course, and there would be no such childish squabbles if the structure of camera clubs and societies were not such as to divide the membership into factions. If there were not in the Photographic Society of America a Color Division operating independently of a Pictorial Division, there probably would be no feud. For there is no schism between two kinds of photography, but only between groups of men who persist in emphasizing the wrong values.

Color may be more popular than black-and-white, but this does not mean that it is more important, and if the clubs would devote themselves to the art of *photography*—regardless of kind or color—the question about the superiority of one over the other would never arise.—*Bruce Downes*

Next month



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Over 50 exciting pages of pictures that won $25,000 worth of prizes

The editors tell why they picked the winners . . .

. . . and 3 outspoken critics tell what they think of them

PLUS—EXCLUSIVE HOLIDAY GIFT GUIDE LISTING ALL NEW-MODEL CAMERAS & ACCESSORIES

Don't miss this hefty special issue . . . Over 200 pages!

Popular PHOTOGRAPHY

finder

News and comment by the editors

An issue for flashbulbers and speedlighters

Following the spectacular success of our two-month 35-mm "issue," this month's Pop Photo is off in a flash of blinding light! We've put all our bulbs and tubes into one big basket, giving you another comprehensive single-subject issue worthy of any photographic reference shelf. To begin with, we've taken note of the enormous popularity of the "subminiature" M2 flashbulb among both amateurs and professionals, and built a series of brief, pithy picture stories around its applications. We follow up with eye-openers like the *Life* radio-controlled flash setup and the color spectacular of the New York Stock Exchange; and we include the instructive Schwalberg piece on electronic flash, and a complete chart of flashbulbs and their characteristics. The whole thing is nicely tied together by a generous picture section illustrating varied uses of flash. All in all, a most rewarding issue for all of you except the unreconstructed view-camera landscaper and the violently purist available-lighter. And even, perhaps, for them. . . .

Next month: contest time

One of the things you've learned to depend on each year is the appearance of Pop Photo's big Contest Issue in December. You won't be disappointed this year; the big book is already in preparation, and judging of contest entries is proceeding on schedule. The panorama at the bottom of this page was shot a few weeks ago, as contest editor **Margaret Church's** office began to fill up with incoming packages of pictures. There you see one phase of the immense clerical task involved in keeping track of the thousands upon thousands of entries, so that all can ultimately be returned to the right packages and the nonwinners returned without unnecessary delay. Let's hope (if you entered the competition) that not everything you sent will be among those nonwinners! See you next month with the results, and a big sampling of the pictures that shared the $25,000.

A big new feature of the same December issue will be a Gift Buying Guide, appropriate to the season, with an introduction titled *How to Choose the Right*

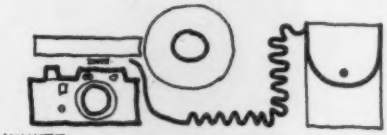

Photo Gift, and equipment classified into five price ranges. Gifts under $10, from $10 to $25, from $25 to $75, from $75 to $150, over $150—to help you match your Christmas list with your pocketbook. Watch for it—next month!

Follow-up on Venetia

The Most Photogenic Girl in the World has gone back to Hollywood now, leaving behind the memory of her fresh youthfulness, and taking with her a brighter fame in show business. Venetia Stevenson, who was our September cover girl and slide-insert girl, got a magnificent reception from press, radio, and television while she was in New York as guest of Popular Photography. Her unusual title captured the imagination of editors and broadcasters everywhere, and in these two months her picture has appeared in hundreds of newspapers and magazines. There's a picture story on some of the events of her New York visit on page 136.

A book about the law

The popularity of our regular column *Legal Problems in Photography* indicates that a lot of people are interested and concerned about laws that regulate the taking and use of pictures. In response to this interest, the authors of the column, Herschel B. Sarbin and George Chernoff, have gathered all their photo-legal wisdom together in book form, under the title *The Law for Photographers*. It is to be published this month by Amphoto, in two editions: cloth, $3.95; paper, $1.95. It should be available soon in camera shops and bookstores across

A Quiet Day in the Contest Room
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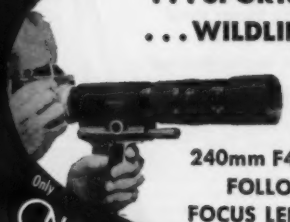

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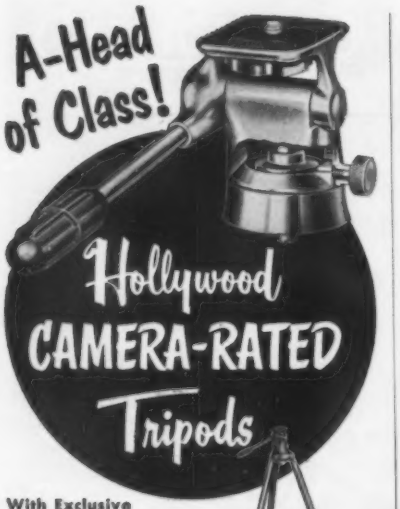

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Handmade trade-in

What would you do if you wanted to buy a new camera, trading in an old one to take advantage of a dealer's offer—but you didn't have the old camera? Some people would go out and buy one second-hand. But an ingenious Californian built one from pieces of an apple box, and **Al Munson,** who operates a camera shop in Long Beach, accepted it in trade toward a new 4x5 Speed Graphic. He felt that "anyone who wanted a new camera badly enough to build an old one certainly deserved a break." And he displayed the contraption in his window with a handsome price tag. We doubt if this proposition will catch on all over the country, but we wanted you to know that it happened at least once.

Welcome, Longines!

We extend a warm editorial handshake to Longines-Wittnauer, known the world over for quality timepieces, on their entry into the photographic field. And we congratulate them on the bold splash they've made already, with a full line of cameras and accessories, and the crowning achievement—the revolutionary new 8-mm movie camera that is its own projector. More about that ingenious piece of precision machinery elsewhere in this issue. We wish you decades of good fortune in photography, Longines, and we'll be watching your progress!

Candid shots . . .

▶ A couple of deserving young men from Ohio are beginning sound photographic educations this fall as recipients of scholarships established by an organization and a private individual. **Jack P. Franks** of Williamsburg, Ohio, won the scholarship to Rochester Institute of Technology under the auspices of the Photographic Society of America, and **Louis Mazzatenta,** of Ashtabula, has been given the **Ralph R. Baum** Industrial Photography Scholarship at Kent State University in his home state.

▶ *This year's conference of the Society of Photographic Scientists and Engineers was held in Asbury Park, N. J., Sept. 9-13. It featured reports on experimental and theoretical studies in the technology and science of photography.*

▶ The Canon Camera Company, one of the leaders in the rebirth of the Japanese camera industry's international reputation, celebrated its 20th anniversary with a three-day festival in Tokyo a couple of months ago. In Japan the 20th birthday is comparable to the 21st in our country. A happy coming-of-age to a pioneering, progressive manufacturer!

▶ *For "outstanding contribution in the development of color films, processes, techniques, or equipment useful in making color motion pictures for theater or television use," this year's* **Herbert T. Kalmus** *gold medal award went to* **Wadsworth E. Pohl,** *technical director of the motion-picture division of Technicolor Corporation. Mr. Pohl, in his 27 years with the company, has contributed to "basic technical advances" and "improved methods of manufacturing."*

▶ The American distributor of German-made Leitz cameras and equipment, E. Leitz, Inc., has elected a new vice-president and secretary: **William H. Mann,** who had been with the firm five years as director, secretary, and assistant treasurer.

▶ *Everybody on location for the Warner Bros. film* Sayonara *in Japan seems to have been a camera fan, if we're to believe a stack of pictures that came to us recently.* **Marlon Brando** *appears to have broken up the shooting of every scene to make candid shots for his personal collection. But the picture we reproduce shows director* **Joshua Logan** *turning the tables on Brando and leading lady* **Miiko Taka,** *with an audience of extras.*

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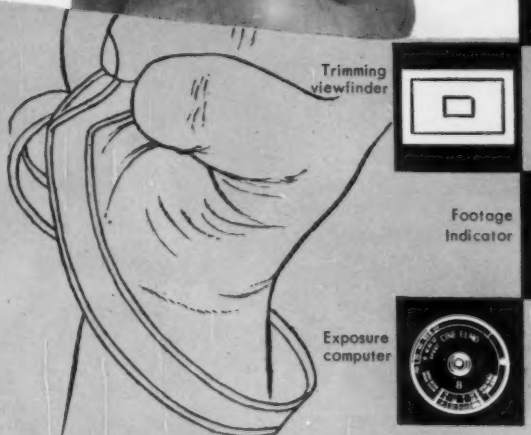

This distinguished looking Elmo Cine Camera is the latest model of the Elmo Co., Ltd., Nagoya, Japan's most experienced manufacturer of movie camera equipment. In its rugged precision-built body is a rare combination of mechanical and optical perfection. The zoom-type viewfinder actuated by a twist of the finger provides a variable field of view for lenses ranging from 6.5 to 38mm focal length. The motor operates at constant speed for at least 40 seconds at 16 frames-per-second. It is supplied with the Elmo 13mm f/1.9 lens and will accommodate all "D" mount lenses. Apart from the outstanding workmanship these advanced features make the Elmo 8AA the most attractive and best value cine camera in its class.

Speeds: 8.16, 24 and 32 frames per second; Shutter Speed: 1/35th sec. at 16 f.p.s.; Rotary Disc Shutter—160 degree angle; Continuous Run Lock and Single Frame Release: Red Signal appears in Viewfinder Window when film is expended; Trimming Finder for fields of view from 6.5 to 38mm; Clear Marginal space for sighting objects outside lens field; Rapid, simple loading—25 ft. double-width 8mm spools; Automatic Footage Indicator; Exposure Computer built in—ASA 10 to 100; Special, Detachable Hand Grip with Wrist Strap; Accepts Elmo Movie Accessories—Titler, Anamorphic Lens, Iris for fade-in and fade-out effects, Wiper for lap dissolves, wipes and other effects.

Elmo 8AA supplied with Elmo 13mm f/1.9 lens, Hand Grip and Wrist Strap.....$99.50

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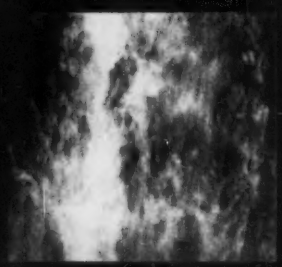
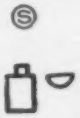


LOOK WHAT YOU CAN DO WITH M2 FLASHBULBS!

Six dollars' worth of inexpensive, compact, miniature flashbulbs were used to make all the pictures in the following section. To lead off this Special Flash Issue, we assigned six photographers to help us prepare a 12-page section on the versatile M2 miniature flashbulb, one of the most popular, convenient, and inexpensive sources of artificial light for photography ever devised. See the surprising variety of results, study the accompanying diagrams and how-to-do-it text, then try out these ideas yourself.

Don Briggs creates a variety

1 *Simplest method is straight flash with gun on an extension and held high for modeling.*



2 *Here flashgun on long extension was pointed at bare wall behind girl for bouncelighting.*

3 *Same as 2 but with a white reflector added to illuminate face shadows.*

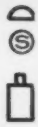
THE midget flashbulb with its modest but highly efficient light output is an ideal choice for flash portraiture. To show what variety of interesting lighting effects an imaginative photographer can achieve with only one M2 bulb, we assigned Don Briggs to shoot this series of portraits. Here's what he did.

Briggs had never used M2 bulbs before, and so relied on the manufacturer's exposure information included on the flashbulb carton. These proved to be accurate, with his twin-lens reflex flash syn-

# of portrait lighting effects with one flashbulb

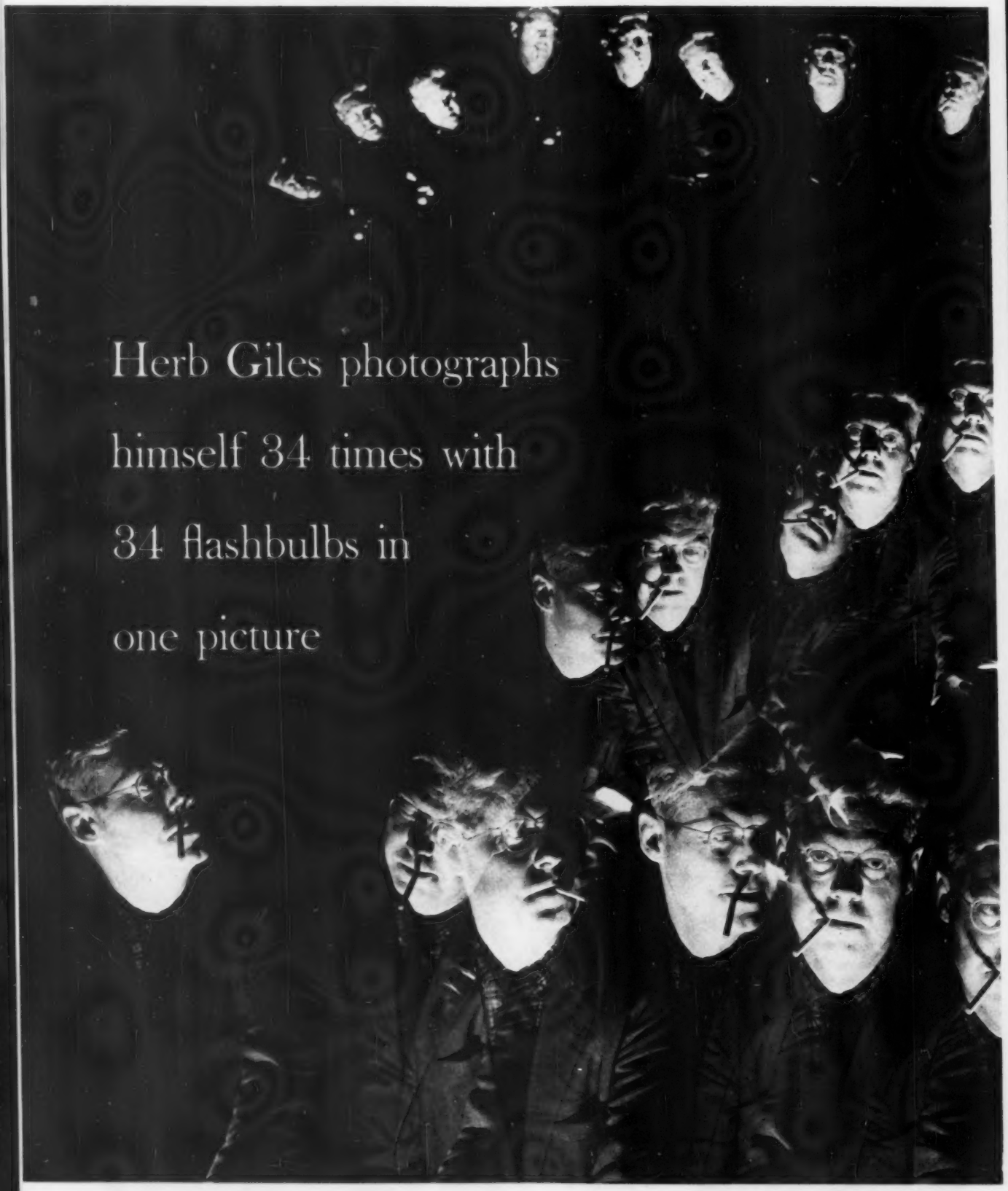
4 *Semidirectional bounce—flash pointed into corner of two reflectors.*

5 *Girl's head shields camera from flashbulb in backlighted shot.*



chronization set for "X." (Although M2 bulbs are specifically designed for use with simple cameras, they can be used with adjustable cameras by using "X" synch and shutter speeds of 1/50 second or less.) His film was Panatomic-X exposed for a normal tungsten rating of 32, ASA equivalent, and developed in UFG.

For **1**, Briggs used an extension cord and direct flash, holding the gun high and to the right. Notice the butterfly-shaped shadow under the nose—the hallmark of high frontlighting. By removing the flashgun from the camera and holding it high you not only push the background shadow down out of sight behind the subject but also add a pleasing touch of modeling to the face. For **2** he used a 15-foot extension cord, clamped the flashgun to a lightstand, and pointed the reflector at the ceiling behind the girl. This leaves the shadow side of the face rather dark, of course, but makes an interesting profile light when the subject turns to catch some of the flash. Picture No. **3** utilizes the same basic setup with the addition of a white cardboard reflector for fill. In **4**, Briggs taped two large sheets of white cardboard together at one edge to form a broad "V," then placed his flashgun about two feet from the intersection with the reflector pointed in. The result: a soft but directional lighting somewhat between the raw effect of straight flash and the more diffuse illumination of bouncelighting. For **5**, he placed the flashgun behind the subject and pointed it toward the camera, shielding his lens from direct rays with the model's head, and filling in the shadows very slightly with a reflector.—


Herb Giles photographs
himself 34 times with
34 flashbulbs in
one picture

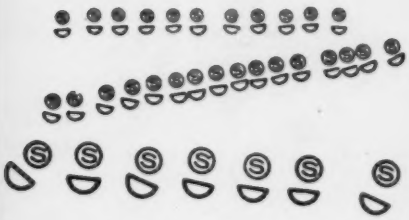
POPULAR PHOTOGRAPHY assigned Herb Giles to do a self-portrait in which he appeared more than a dozen times. Giles took his Meridian 4x5 camera, a tripod, and two pocketfuls of M2 flashbulbs to a paved playground area in New York City, and proceeded to work out his assignment.

He started working in daylight. Setting up his camera at a high angle, he began marking off standing positions with chalk on the pavement. After marking off the back row, Giles checked the groundglass to see if his lens was covering the entire row. He worked this way until 34 positions were marked.

At dusk, Giles briefed a friend who was to serve as an assistant. Giles would go to a spot, shout "Ready," and the assistant would open the shutter. Giles would fire the flashbulb and the assistant would close the shutter, following the flash. Then, the same procedure would continue until all 34 flashbulbs were fired.

The reason for allowing the shutter to be open for only the firing of the bulb was because stray light from street lights fell on the playground. Giles did not want any unneeded images to be recorded on the film.

As Giles walked from position to position, he sometimes changed the direction of the flash gun.—

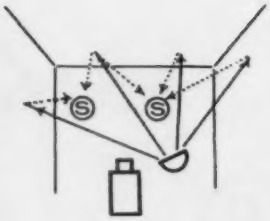


Photographer Giles used Kodak's Midget flash gun to fire flashbulbs. Paper clip, held on gun with rubber band, made contact between poles and fired the bulb.

Try using

Direct flash on camera used here. Exposure, for Panatomic-X film, 1/25 sec, f/11.

flash in the bathroom



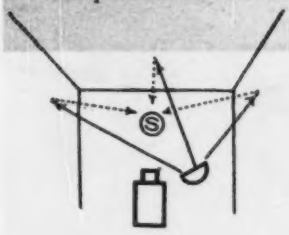
Bouncing flash off walls and ceilings gives softer light, requires larger stop.

to photograph kids

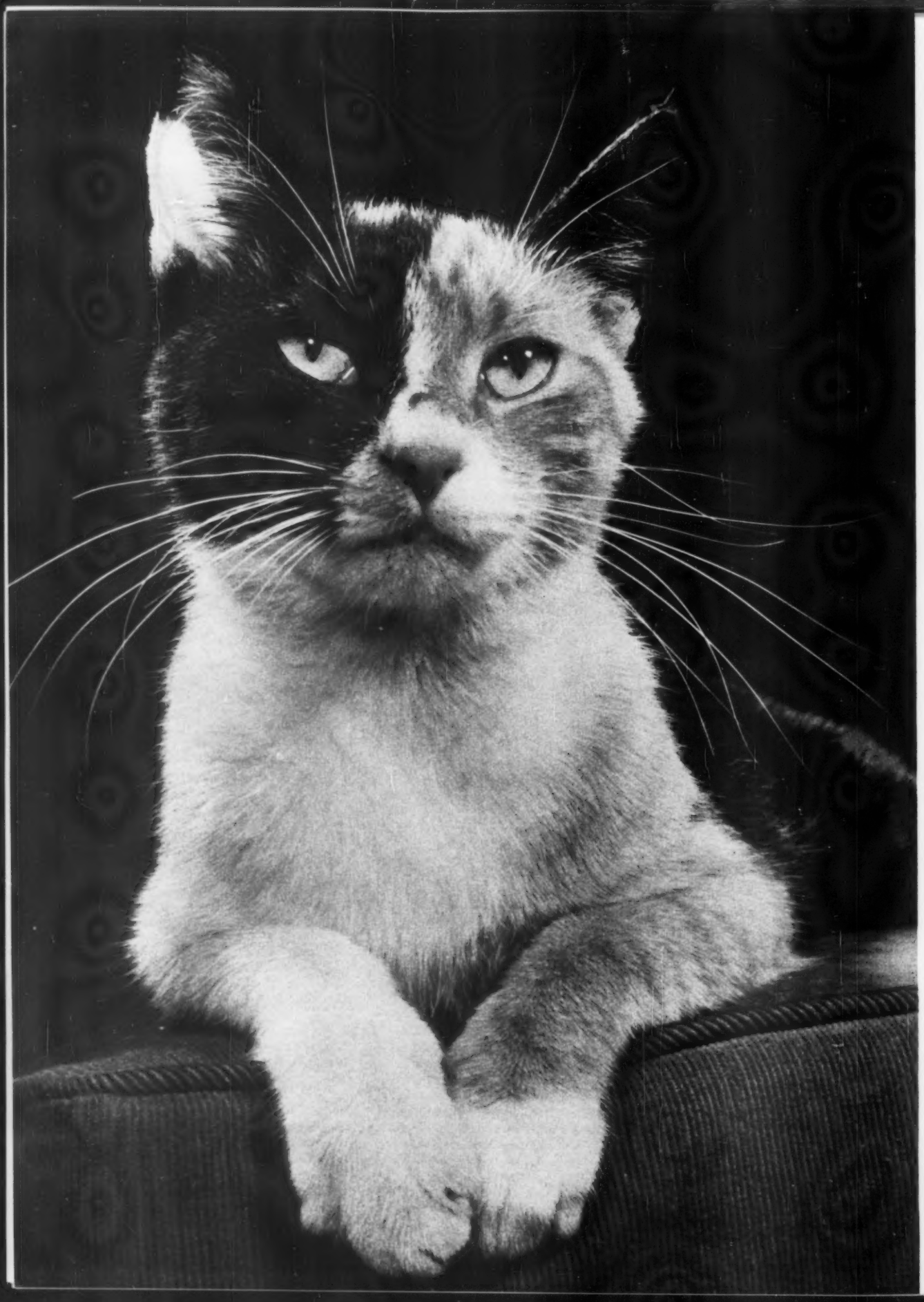
Bare bulb used without reflector produces this effect. Notice open shadows.

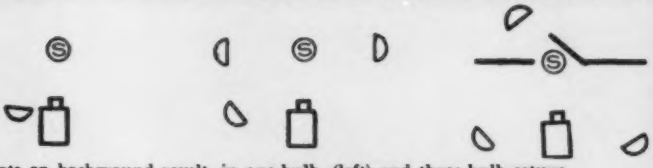
Pictures on this page by George Ward

Bathrooms with light wall are ideal for flash pictures with miniature flashbulbs.

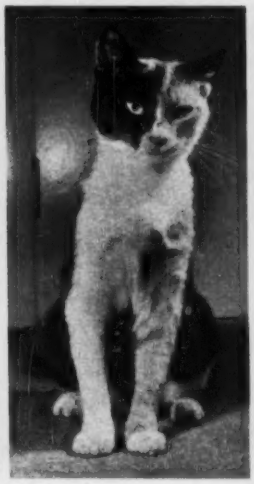


One of the easiest ways to take informal pictures of children is to photograph them with flash—bounce, direct, or bare bulb—in the bathroom. George Ward, who has been using the technique with his own kids for years, made all these pictures with M2 bulbs. "Most people tend to overexpose flash pictures made in small, light-colored rooms," Ward says, "and therefore the M2 bulb with its relatively limited light output lends itself very well to this kind of shooting situation." Even so, he recommends choosing a slow, fine-grain film such as Panatomic-X or Adox R-17, and reducing direct-flash exposures at least one stop from those recommended by the manufacturer for average interiors. The advantage of shooting in the bathroom is that light bounces freely off all the walls; in effect, turning the room itself into a giant reflector and filling in shadows nicely. But this also means increased intensity of illumination and a corresponding *(Continued on p. 146)*





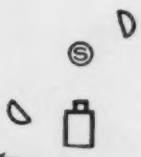
Hot spots on background result, in one-bulb (left) and three-bulb setups, when light is carelessly angled. Right: good three-bulb shot, backlighted.



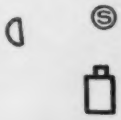
M2 continued

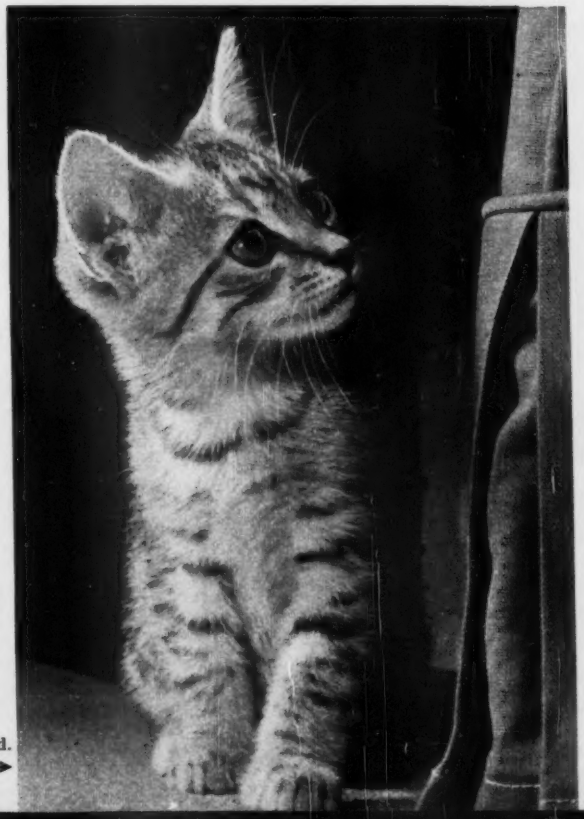
Walter Chandoha shows you how to shoot pets with small bulbs in simple setups

Your compact and convenient flashgun, fitted with an M2 bulb, is a good light source for appealing pictures of your pet. And two or three bulbs fired together can improve your cat and dog shots proportionally. To illustrate the point, famed pet specialist Walter Chandoha made a set of portraits of two of his favorite "models" with varying applications of the M2, some showing common amateur errors. He began with a single bulb, first on the camera, then off to one side. With two bulbs, he arranged a setup similar to the basic one used for portraiture with human subjects. Adding a third M2 to the scheme, he tried two variations. All these shots were made with a Rolleiflex, on Panatomic-X film developed in D-23 for seven minutes. All exposures were 1/50 second at f/22. Chandoha suggests that if you choose Verichrome Pan or similar film, a handkerchief should be used over the reflector to cut light intensity.—

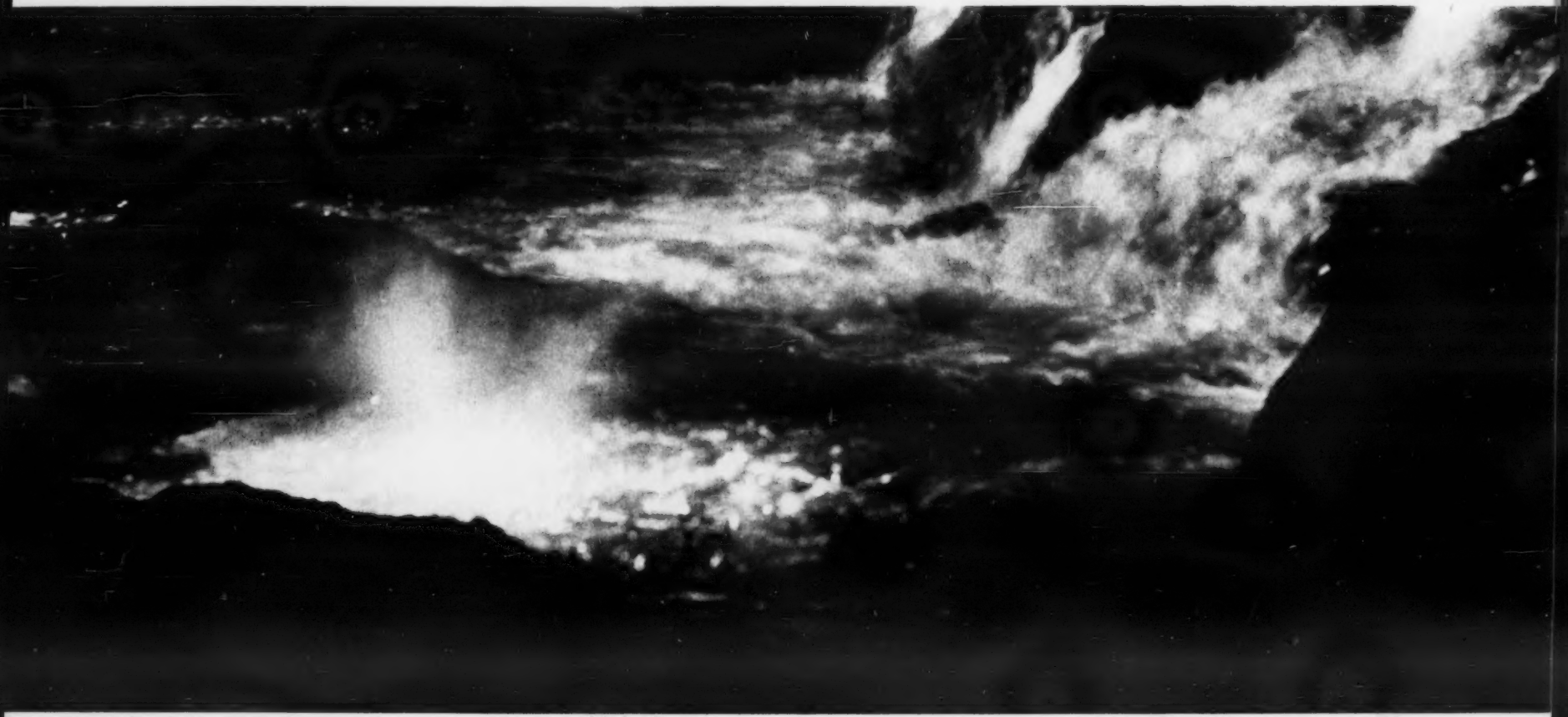


← Two bulbs: one angled from high left, another from right at 3 feet.

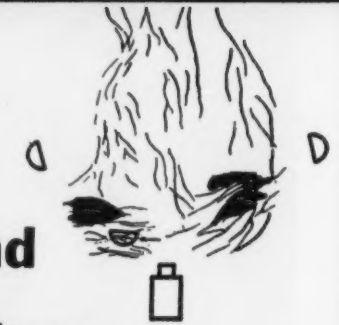




One bulb, placed 3 feet at left, sets off cat's face against background. →



M2 continued



35-foot waterfall and cascading Croton River are shot with 3 M2 bulbs

Working in darkness, and using a camping searchlight to find his way from one position to another, John Durniak made this shot with three M2 bulbs.

One bulb was fired from the top of a mound to the right of the falls. It was aimed to cover the cascading water. The second bulb was lowered into the pool and fired underwater. (Durniak made a simple extension. He connected two thin wires to an M2 adapter, one to the base, the other to its side. An M2 bulb was inserted into the adapter. Another M2 bulb was carefully broken, glass and foil removed. Other ends of the wire were attached to exposed lead-in wires of the M2 and base was then inserted into a B-C, M_2 flash gun. Contact made on gun fired the underwater bulb.) The third bulb was fired at left of falls.

Between flashes, so that searchlight would not record on the film, an assistant held a black slide in front of the camera lens. Durniak used a 4x5 Linhof with a 150-mm Schneider Xenar f/4.5 lens. Aperture was set at f/8.—▶

For outdoor shooting, small bulbs offer 'just right' light to fill shadows by synchro-sun technique

Photographs by HARVEY SHAMAN

Disappointing result of shooting partly shadowed subject in bright sunlight: when exposure is right for background, most of girl's face is lost. On opposite page are two examples of the use of synchro-sunlight flash. For dramatic effect (bottom) background was ignored in determining exposure, which was 1/50 second at f/22, with flash 5 feet at left. For balanced exposure (top), the bulb was moved back to 10 feet and aperture changed to f/11.

Versatile M2 bulbs are fine companions for outdoor shooting, in shade or bright sunlight. They can help lighten a shadowed foreground in backlighted pictures, or create dramatic effects with simple exposure variations. Consider the examples on these pages. First there is the unsuccessful shot above, for which an exposure-meter reading was taken from the city background, heavily influenced by a bright sky. This left most of the pretty model's face in deep shadow. In the picture at bottom of the facing page, the situation was reversed, with all attention concentrated on the girl. The background became dark and the clouds emerged more strongly, for an unusual effect. The guide number for an M2 with Panatomic-X film is 100; divided by the lamp-to-subject distance of five feet, this gives an aperture of about f/22. This was not enough exposure for the background. How would you go about getting both model and background well illuminated? A compromise exposure? No; then neither would be really correct. We know from the first picture that the background needs f/11, so we use that. Dividing the guide number of 100 by that, we find the lamp-to-subject distance must be about 10 feet. We move the lamp back, and everything comes out right. Instead of moving the lamp back we could have cut light intensity by draping a white handkerchief over the reflector.—▶

For best picture results

KNOW YOUR

QUICK as a flash!

How many times have you heard this expression? Possibly hundreds of times. Yet, how quick is a flash? More specifically, how quick is a flashbulb?

Too many times, photographers take flashbulbs for granted. Too many feel that one bulb is as bright as another, or as good for a given situation as another. But, there are often subtle, and sometimes great differences in bulbs that might pass for twins.

Below is an important chart which can help you decide which bulb is the right choice for a given situation. However, before you use it, it's important to know something about the categories listed and what bearing they have on your work. Let's go over each of them:

Type of Base. The flash gun you own is built to accept a certain kind of bulb. If the socket is big enough, it can take adapters which will in turn accept a full range of bulbs. If the gun is small (like an M2 flashgun) it will take only one size. Buy bulbs that can be used in your flash gun.

Time to Peak. A bulb is like a miniature campfire. It starts burning slowly, builds up to its greatest intensity, and then burns out. If you were shooting by firelight, it would be wise to wait till the fire hit its peak and then shoot your pictures in order to get the most illumination. When shooting with a flashbulb, it's wise to shoot at the bulb's highest brilliance (at the peak). Knowing the time a flashbulb takes to reach its peak (usually expressed in milliseconds) allows you to select a synchronizer setting to insure your getting the most light out of the lamp.

Synchronizer Setting. On most cameras there is a choice of M, F, or X synchronization. If a bulb like the No. 5 which is meant for use with M is used on X, you will be getting only a small part of the light from the bulb. Use the flashbulb of your choice with the right synch setting!

Approximate guide number. This line

M2 As low-intensity bouncelight in available-light situations. For on-the-camera flash with box-type cameras. Subject should not be more than 15 feet away when using simple box camera.

PF1 Same as M2 but bulb has no base, therefore must be used with special base adapter fitted into your flash gun. **Should be used with M synch setting on camera.** Like M2 and 8 is low-cost bulb

SM or SF For simple box cameras when action is to be photographed. The **fast** flash of light itself acts as shutter, stopping the action. Gives camera speed of about 1/100 sec.

8 About the same guide number as M2 and PF1, but has bayonet base. Use at M synch setting.

5 or 25 Most powerful of the small-sized bulbs, and the press photographer's standard for many years. Available in the widest range of coatings and manufacturers.

6 or 26 Very long duration at full light intensity, for synchronization with focal-plane-shutter cameras up to 2¼ x 3¼ negative size. Do not use shutter speeds slower than 1/100 sec unless advised by camera manufacturer.

TYPE OF BASE	PINLESS MINIATURE					BASELESS					BAYONET							BAYONET						BAYONET					BAYONET				
TIME TO PEAK (Milliseconds)	15-18 Depending on Manufacturer					20					5-6							20						20					FOCAL PLANE				
SYNCHRONIZER SETTING	Set adjustable shutters at "F" or "X." Shoot 1/60 sec or slower.					Medium					Fast							Medium						Medium					Medium				
Approximate* GUIDE NUMBER ASA 64 Black-and-white film 1/60 sec shutter speed	135 3-4½-inch M2 reflector					135 4-6-inch reflector					115 4-6-inch reflector							135 4-6-inch reflector						205 4-6-inch reflector					125 1/100 sec 4-6-inch reflector				
MANUFACTURER	DURA-FLASH	GENERAL ELECTRIC	SOLAR	SYLVANIA	WESTINGHOUSE	AMPLEX					AMPLEX	DURA-FLASH	General Electric	SOLAR	SOLAR	SYLVANIA	WESTINGHOUSE	DURA-FLASH	GENERAL ELECTRIC	SOLAR	SYLVANIA	WESTINGHOUSE	AMPLEX**	AMPLEX	DURA-FLASH	General Electric	SOLAR	SOLAR	SYLVANIA	WESTINGHOUSE	AMPLEX	DURA-FLASH	GENERAL ELECTRIC	SYLVANIA	WESTINGHOUSE
BULB DESIGNATION	M2	M2	M2	M2	M2	PF1					SM	SM	SM	SM	SF	SF	SM	8	8	8	8	8	PF2	5	5	5	25	25	25	6	6	6	26	6
TOTAL LIGHT OUTPUT of clear bulb (Lumen Seconds)	7,000	7,000	7,000	7,200	7,500	7,000					4,700	6,000	4,000	5,000	6,000	6,000	6,000	8,000	9,000	7,000	7,000	7,000	5,600	18,000	19,700	18,000	19,000	20,000	20,000	20,000	18,000	17,500	17,500	18,000	17,500
CLEAR BULBS (for B&W film and Type F color film)	✓	✓	✓	✓	✓	✓					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
BLUE COATING (for Daylight color film)	✓	✓	✓	✓	✓	✓																		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
AMBER COATING (for Type A color film)																									✓		✓	✓	✓			✓			
IR COATING (for infra-red B&W film)																									✓	✓									

*Guide numbers for polished reflectors. When using satin reflectors open lens ½ stop

**Amplex PF2 has same appearance as 5 and 25 but has lower light output. PF2 guide number is 135

FLASHBULBS

in the chart will give you at a glance the power of a flashbulb. The larger the guide number, the greater the intensity of the light.

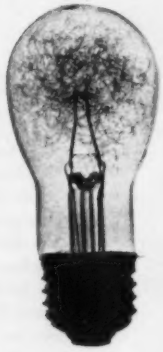
Bulb designation. From this line in the chart you can learn the name that the manufacturer gives his bulb, so that you can purchase exactly what you want.

Total light output. This line will tell you how much light you can get from a bulb throughout the entire period of its illumination.

Flashbulb colors. At the bottom of the chart are listed the various coatings in which bulbs are made. Different color bulbs are meant to be used with different types of film. You can match the type of film in your camera with the type of bulb you need and then find out who makes these bulbs.

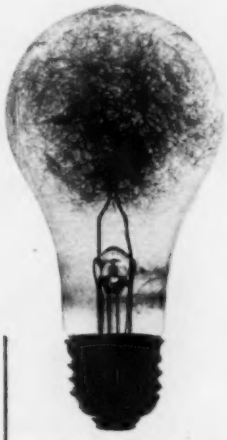
Besides flash facts, we have also listed some of the general uses the bulbs can be put to.—▶

Photographs by Harvey Shaman

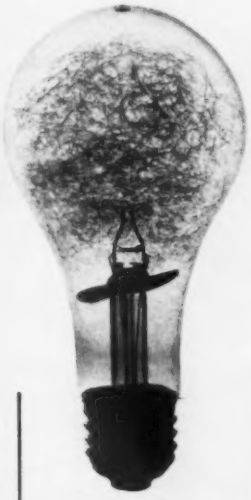


0 Least powerful medium-base bulb. For shooting in close to subject, where larger bulbs would emit too much light.

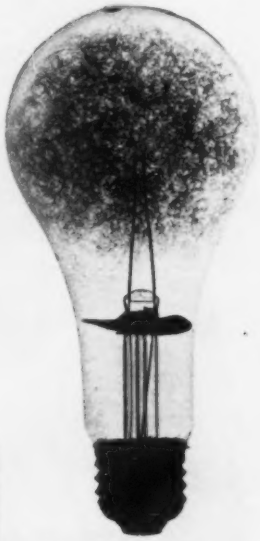
11 or 40 Medium-power bulb excellent for group shots. All-around large-base bulb.



22 or 2 Powerful bulb. Best for extra-large groups, crowds, large areas. Fused for use on 110 volt a-c as well as with batteries.



31 or 2A For large cameras (like Speed Graphic) with focal-plane shutters.



50 or 3 Most powerful flashbulb made. Best to use this bulb at M setting, 1/25 sec or slower. Excellent with open flash.

MEDIUM SCREW			MEDIUM SCREW						MEDIUM SCREW						MEDIUM SCREW FOCAL PLANE						MEDIUM SCREW					
20			20						20												30					
Medium			Medium						Medium						Medium						Slow					
195 6-7-inch reflector			220 6-7-inch reflector						275 6-7-inch reflector						115 1/100 sec 6-7-inch reflector						440 1/25 sec large studio reflector					
		SYLVANIA		AMPLEX	DURA-FLASH	GENERAL ELECTRIC	SOLAR	SYLVANIA		AMPLEX	DURA-FLASH	GENERAL ELECTRIC	SOLAR	SYLVANIA	WESTINGHOUSE	AMPLEX	DURA-FLASH	GENERAL ELECTRIC	SYLVANIA	WESTINGHOUSE		AMPLEX	DURA-FLASH	GENERAL ELECTRIC	SYLVANIA	WESTINGHOUSE
		0		11	11	11	11	40		22	22	22	22	2	22	31	31	31	2A	31		50	50	50	3	50
		20,000		30,000	32,000	32,000	28,000	30,000		68,000	70,000	70,000	62,000	62,000	70,000	77,000	81,000	81,000	77,000	81,000		85,000	100,000	100,000	110,000	100,000
		✓		✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
				✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓			✓				✓	✓	✓	✓	✓
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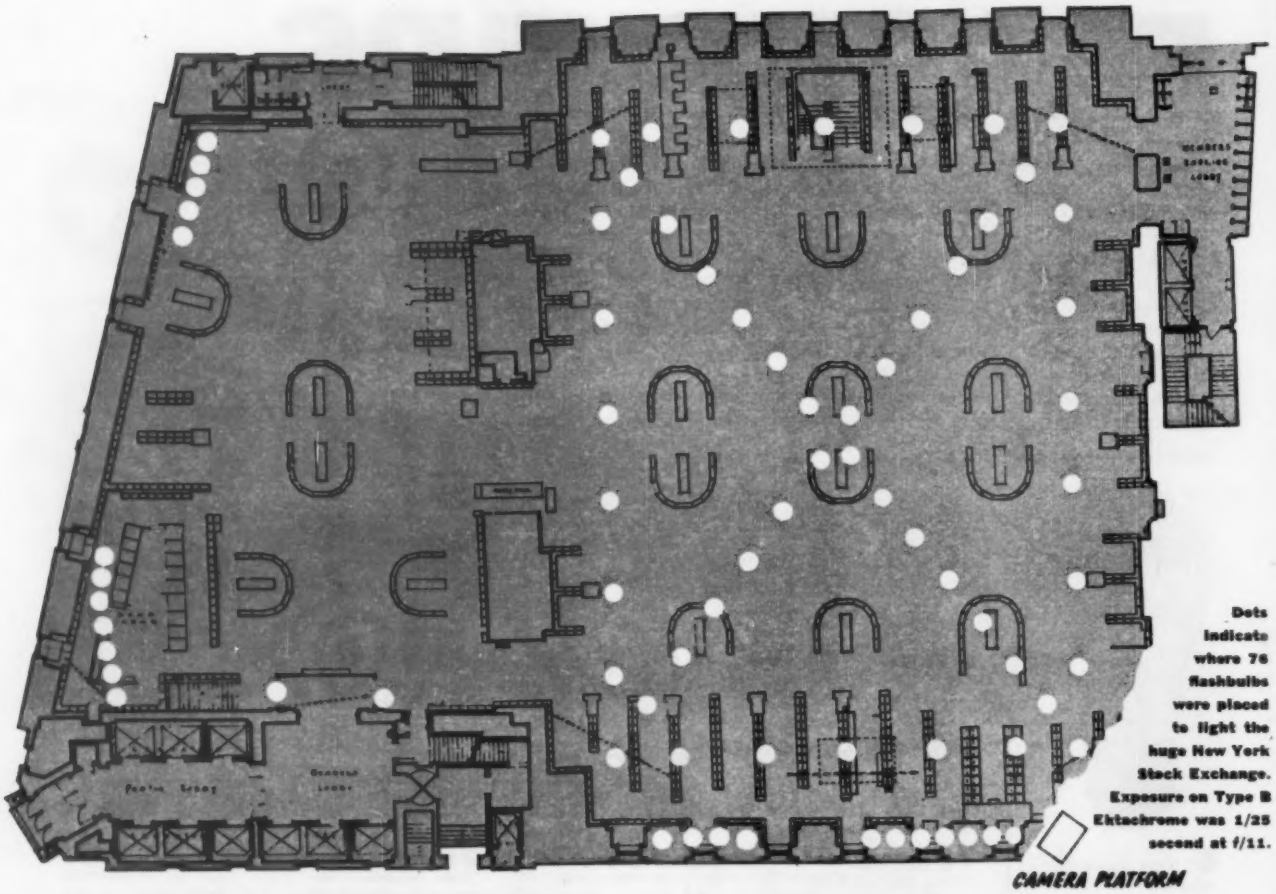


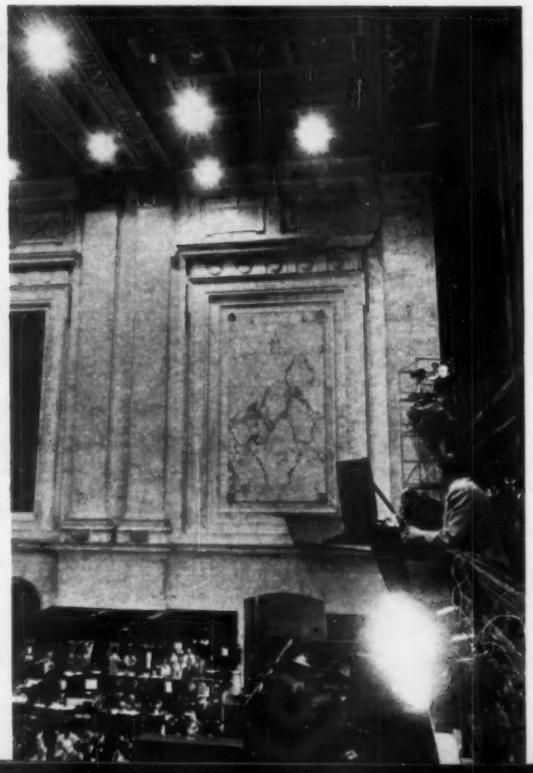
Dots indicate where 76 flashbulbs were placed to light the huge New York Stock Exchange. Exposure on Type B Ektachrome was 1/25 second at f/11.

GIANT FLASH PROBLEM

Here is how four experts photographed the NEW YORK STOCK EXCHANGE in color

One afternoon at the peak of trading activity the gigantic floor of the New York Stock Exchange was suddenly flooded with light. Shutters on six cameras fired in synchronization, and the colorful scene at right was recorded.

The flash that blinded the brokers—momentarily as bright as a concentration of 5,000 ordinary 60-watt bulbs—lasted only a fraction of a second. But work on this monumental photograph had actually started three months before, when Sylvania assigned their photoflash engineer Dick Martinson and the three Burns brothers of Schenectady, New York, to capture the drama of the nation's largest securities market as one in the company's series (*Continued on page* 137)



Flashbulbs fire as color shot is made. Temporary platform in rear corner of balcony was used to raise the six cameras high above Exchange trading floor.

TWO WAYS WITH SPEEDLIGHT

Courtesy Look

Here are two vividly different examples of speedlight at work; one depicting the attractive visual and tactile qualities of a still-life; the other demonstrating, as only multiple speedlight can, the precise stages of a fast action.

In his study of grapes, Louis Stettner used an 8 x 10 Deardorff camera with a 12-inch Commercial Ektar *f*/6.3 lens. He bounced three heads of his 800-watt-second Ascor speedlight unit off nearby white flats to create an illusion of soft daylight. The aperture was *f*/16, giving sufficient depth of field to sharply define the grapes against the purposely out-of-focus model in the background. Made with Ektachrome Daylight film.

A much more complex job was *Look* staffer Frank Bauman's shot of Dodger Gil Hodges demonstrating a catch at first base. Hodges was placed within a carefully marked area in front of a black paper background. Six 1000-watt SR units were spaced, three on each side of a Rolleiflex. When an assistant threw the ball to Hodges, Bauman opened his shutter at *f*/11, tripped a simple throw-switch which set off consecutive flashes of the units, then closed the shutter. One-hundred-twenty exposures on Daylight Ektachrome were made over a five-hour period to get the shot exactly right.—▶

Study of Grapes, *Louis Stettner (above)*
Gil Hodges, *Frank Bauman (left)*

POLAROID TEST PRINTS FOR COLOR

They help pin down lighting variables

and eliminate the need for bracketing

Jerry Yulsman used Polaroid Land prints to help solve difficult problems posed by color illustration on facing page.

1 *First Type 41 print is too dark. In successive tries Yulsman also corrects lighting balance between the two figures.*

2 *This print shows desired density. Color shot on Daylight Ektachrome required 3½ stops more exposure.*

3 *Several prints were made to determine dance movements needed to achieve degree of blurring desired by Yulsman.*

4 *Last Polaroid print provides monochromatic approximation of Ektachrome transparency shown at left.*

Have you ever made a color shot under difficult conditions and wondered what you'd get back on the transparency? If you haven't, you're either very darned lucky or you just don't shoot much color. If you have, you'll be able to sympathize with Jerry Yulsman, a young New York magazine and advertising photographer whose problems come in the large, professional size. Here's what Yulsman was up against on a recent record-jacket assignment, and how the Polaroid Land camera came to the rescue.

The album was to be a collection of Gypsy folk music. Yulsman's idea was to have a Gypsy violinist playing straight at the camera and occupying most of the picture foreground. In the background, of course, there had to be a swirling dancing girl. The violinist had to be tack sharp from his earrings to the bow of his instrument. Gypsy girls move fast, so the dancer had to be blurred, with her colorful skirt contributing vibrant bands of out-of-focus color.

Yulsman's solution was to light the violinist with electronic flash, the girl with standard 3200 K incandescent studio lamps. Electronic flash called for a daylight-balanced color film, and the fact that the dancer would be bathed in light some 3,000 degrees "hotter" than the daylight balance was all to the good: the colors would have a real gypsy-firelight quality, and just to make sure, daylight Ektachrome 4x5 sheet films, a material known for its warm effects, was therefore chosen.

In effect, Yulsman was going to make two different photographs on a single sheet of film, and with a single exposure. As he planned the shot, the technical problems became enormous.

Photographers—beginning amateur and top professional alike—have two methods for *(Continued on page 140)*

Al Wertheimer could not approach singer to take meter reading, so he made prints with Polaroid camera until he found correct exposure.

Photograph by Ralph Morse Courtesy LIFE © Time, Inc.

LIFE'S RADIO-CONTROLLED

Life Magazine's electronic and photographic experts have harnessed the radio signal for use in flash photography. For the first time, they have developed a bug-proof transmitter and receiver that can operate between a camera and an electronic flash unit (or from a photographer to a remote camera) so that split-second shutters can operate fully synchronized *with split-second electronic flash. Here's the story on how* Life *developed its radio-controlled flash synchronization system by one of the men who helped achieve it.*—**The editors.**

IN 1939, I was assigned to shoot a picture of a TWA airliner at dusk. One of the problems I had to solve was to light the inside of the plane's cabin. Then, the only practical way out was to string more than twenty automobile-type lamps through the cabin and turn them on.

While wiring the lamps together, an idea hit me: wouldn't it be great if you could wire a string of flash lamps together, go back to camera position, and fire these lamps by a radio signal!

FLASH

By BILL SUMITS

Fourteen years later, the chance to work on such a radio-controlled flash system presented itself. *Life* had developed an excellent giant electronic flash setup that could fill a huge arena with a flash of light more brilliant than sunlight. But, there was one disadvantage—photographers were tied down to wires. Everywhere they went, the synchronization cord *(Continued on page 114)*

Photographer Ralph Morse was given the first assignment on which the radio-control device was used, Billy Graham's New York Crusade meeting. Photograph (above) was made with wide-angle lens on a 4x5 Speed Graphic. Morse moved about Madison Square Garden with only the transmitter on his back. Picture right shows Morse with camera and transmitter, and Bill Sumits at the receiver unit. With this setup, photographer is free of all synchronization wires and can move as freely as an available-light photographer, regardless of type of camera he is using at the moment.

Walter Daran

WHAT YOU SHOULD KNOW ABOUT YOUR SPEEDLIGHT

Manufacturers' ratings are a good starting point, but to match your equipment to your own way of working, make these simple tests

By BOB SCHWALBERG

Using recommended guide numbers as a basis, make a test series like this one

f/4

In a light-colored room with much reflectance, f/4 exposure left no highlight detail.

f/5.6

Stopping down to f/5.6 made slight improvement, but not enough to save highlights.

THERE'S so much mystery, mythology, hocus-pocus, and just plain hokum in the electronic-flash field today that the average beginner is very apt to confuse these modern sources of photographic flash lighting with the complexities of the atomic bomb, and much of the writing in the field with the exposition of faith healers. Actually, the modern speedlight unit is, at least by present-day standards, a rather simple device consisting of five fundamental parts. These are:

(1) A *power supply* which provides electrical energy that is collected in (2) one or more *electrical storage capacitors* which hoard this energy until (3) the *triggering circuit* is activated by the camera shutter's internal synchronization contacts so that at the very instant that the shutter is completely open all of this power in the capacitor (or capacitors) is discharged into (4) the *gas-filled flashtube* which converts this electrical energy into useful photographic light which is directed toward the subject by (5) the reflector.

f/8

Best exposure in series is *f*/8; below. However, test results apply only to similar situations. In darker room with little reflectance, other factors equal, *f*/8 gives underexposure, above. About *f*/5.6 would be right.

f/8

FACTORS AFFECTING LIGHT OUTPUT

The light output of electronic-flash units is affected by a great many factors which fall under three general headings: *Electrical energy consumption; reflector design;* and *internal circuit efficiency.*

The amount of electrical energy consumed in the flashtube discharge is doubtlessly the single indispensable factor involved, and probably the easiest to define numerically. It is perhaps for these very reasons that the importance of so-called watt-second ratings has been so tremendously overemphasized. The fact is, however, that a watt-second rating is a measure neither of speedlight performance nor of light output, but a measure merely of the electrical energy stored in the capacitor (or capacitors). And, since there's many a slip 'twixt the capacitor and the tube, these ratings aren't even very reliable indicators of flashtube power consumption.

Reflector design is a matter of the designers' making the best possible compromise between such things as the size and shape of the reflector, the position (or "focus") of the tube inside this reflector, and the size and configuration of the flashtube itself. The importance of good reflector design can be appreciated by the fact that the minimum reflector factor accepted (or at least admitted to) today is 8X, which means that the effective light falling upon a subject is at least eight times (or three full *f*-stops) greater with the reflector than without it.

The contribution of internal circuit efficiency factors is essentially (although not completely) negative, and has to do with the performance characteristics of the various components and circuit elements involved. Such things as superior power supplies (which produce more energy), higher quality capacitors (which waste less energy), and more-efficient flashtubes (which produce more light per watt-second), and other such quality aspects of the electrical hardware inside the unit play a very large part in the powerful performance of modern portable speedlights.

THE GUIDE NUMBER IS THE PAYOFF!

Thus far we have considered the light output of an electronic-flash unit only in terms of its physical strength, as it would, for example be measured on the dial of an electronic-flash meter (such as the General Radio or Clarke Instruments meters) in lumen-seconds. From a practical point of view, however, what we are really interested in is the photographic potency of this light.

In flash photography, the unit of exposure is the guide number, an abstract number into which we divide our light-to-subject distance (in feet) to obtain the proper *f*-stop setting. With expendable flashbulbs we can obtain different percentages of the total lamp output by synchronizing at different shutter speeds. In electronic flash, because of the very brief duration of the flash (the longest of which last about 1/500 sec, the shortest 1/10,000 or less) the shutter speed becomes immaterial, and the guide number remains constant for an exposure at 1/25 or 1/500 sec.

Just as the strength of the electrical power input is only one of a large number of factors which affect the light output of an electronic-flash unit, so the strength of this light output is only one of a number of factors affecting the photographic effectiveness, or guide number of the unit. These other factors are:

1. The angular coverage of the reflector.
2. The flash duration.
3. The color temperature of the light.
5. The inherent characteristics of the film material.
6. The processing treatment given the film material.
7. Individual preferences and differences of opinion.

REFLECTOR COVERAGE

Most speedlight manufacturers agree

f/11

At *f*/11 shadow detail begins to be lost, and flesh tones are no longer rendered faithfully.

f/16

Last stop, *f*/16, is nearly total loss. This series is overextended to demonstrate latitude.

With electronic flash, the rule is strict: stick to guide number, develop normally

Contrary to general practice, in speedlight photography underexposure cannot be compensated for by extended development. This shot of a boy on a carousel is example of proper rating and processing.

These are results of underexposure, overexposure, and overdevelopment with speedlight

Overdevelopment of 50% was formerly a rule of thumb, but with today's units, it results in grainy negatives with blocked highlights.

Underexposure ot one stop plus 50% overdevelopment results in loss of detail in shadow areas as well as blocked-up highlights.

Overexposure produces a pasty flatness, adds to graininess, and detracts from the image sharpness characteristic of electronic flash.

in defining the coverage of a reflector as the angular field over which the light intensity at the edges is equal to 50 percent of the light intensity at the center of the field. This does not, however, mean that all reflectors are alike. As a matter of fact, reflector coverage angles are probably the biggest variables existing between competitive units on the market today.

The reason for this is very simple: The wider the reflector coverage, the more the total amount of light produced by the flashtube is spread out, and the lower the guide numbers. Reputable manufacturers differ considerably as to desirable reflector beam coverage. Some feel that since the average standard focal-length lens covers a field of about 46 to 50 degrees, a coverage of 50 degrees is adequate. Others recognize the importance of semi-wide-angle focal lengths in contemporary shooting practice (like the 127-mm lens on 4x5 and the 35-mm lens on a standard 24x36-mm 35-mm negative format, both of which cover a field of approximately 62 degrees) and design their reflectors to give adequate coverage with these lenses. Some manufacturers offer reflectors with two beam settings; one for normal focal lengths, one for wide-angle lenses.

In testing a speedlight, its beam coverage characteristics should therefore be carefully investigated, and some practical test procedures will later be indicated.

FLASH DURATION

When the capacitor (or capacitors) in an electronic-flash unit discharge their energy into the flashtube things happen awfully fast, but not so fast that a certain amount of time is consumed, first, in building up from zero to peak intensity, and second, in falling off from peak intensity to darkness. Flash duration is universally defined as the time consumed by an electronic flashtube from ⅓ peak to ⅓ peak.

Most portable speedlights today operate at a flash duration of approximately 1/1,000 sec, or "one millisecond." Some of the more powerful units (with watt-second ratings from 200-to-250) have a flash duration of 1/500 sec, and many of the low-powered lightweights (rated at about 40-to-60 watt-seconds) operate with flash durations equal to 1/2,000 sec, or slightly faster.

At one time it was widely held that differences in flash duration materially affected practical guide numbers, all other things being equal. Today, however, the consensus of opinion is that this factor has very little practical effect on guide numbers. The two things definitely affected by flash duration are (1) action-stopping ability of the exposure and (2) negative and transparency contrast. This latter effect is usually overemphasized, however, and most authorities today agree that there is little appreciable difference in contrast with flash durations from about 1/500 to 1/5,000 sec.

COLOR TEMPERATURE

The color temperature of electronic-flash units closely approximates that of average daylight conditions. The published specifications for most units varying between 5,500 to 6,500 degrees Kelvin. Differences in specifications are, however, more significant in terms of indicating differences in equipment and techniques used to obtain these measurements, than they are of differences between actual color-temperature characteristics. In addition, the gas-discharge tube is not what the physicists term a "black-body radiator," and Kelvin temperature specifications for flashtubes is therefore only an estimate of color quality.

The significance of what minor variations do exist, is of significance mainly in color photography where most critical photographers will use some mildly warming filter (such as the Wratten 81 or 81-A) to compensate for excessive bluishness in the flashtube. The effect of color temperature upon some black-and-white films will be discussed shortly.

INHERENT FILM CHARACTERISTICS

Inherent film characteristics, of course, play a very major part in determining the photographic effectiveness of electronic-flash units.

The important film characteristics are listed below:

(1) *Inherent speed.* Faster films will usually, although not always, give higher guide numbers than slower materials. This is because of (2) differences in *color sensitivity* and (3) different inherent film response to *reciprocity failure.*

All films—B&W and color—are highly sensitive to blue light. Some high-speed B&W materials, however, obtain their high speed ratings because of increased sensitivity to *red* light. Examples are Peromnia 25 and Agfa Isopan Ultra, both of which give lower electronic-flash guide numbers than other films having similar (or somewhat lower) speed ratings.

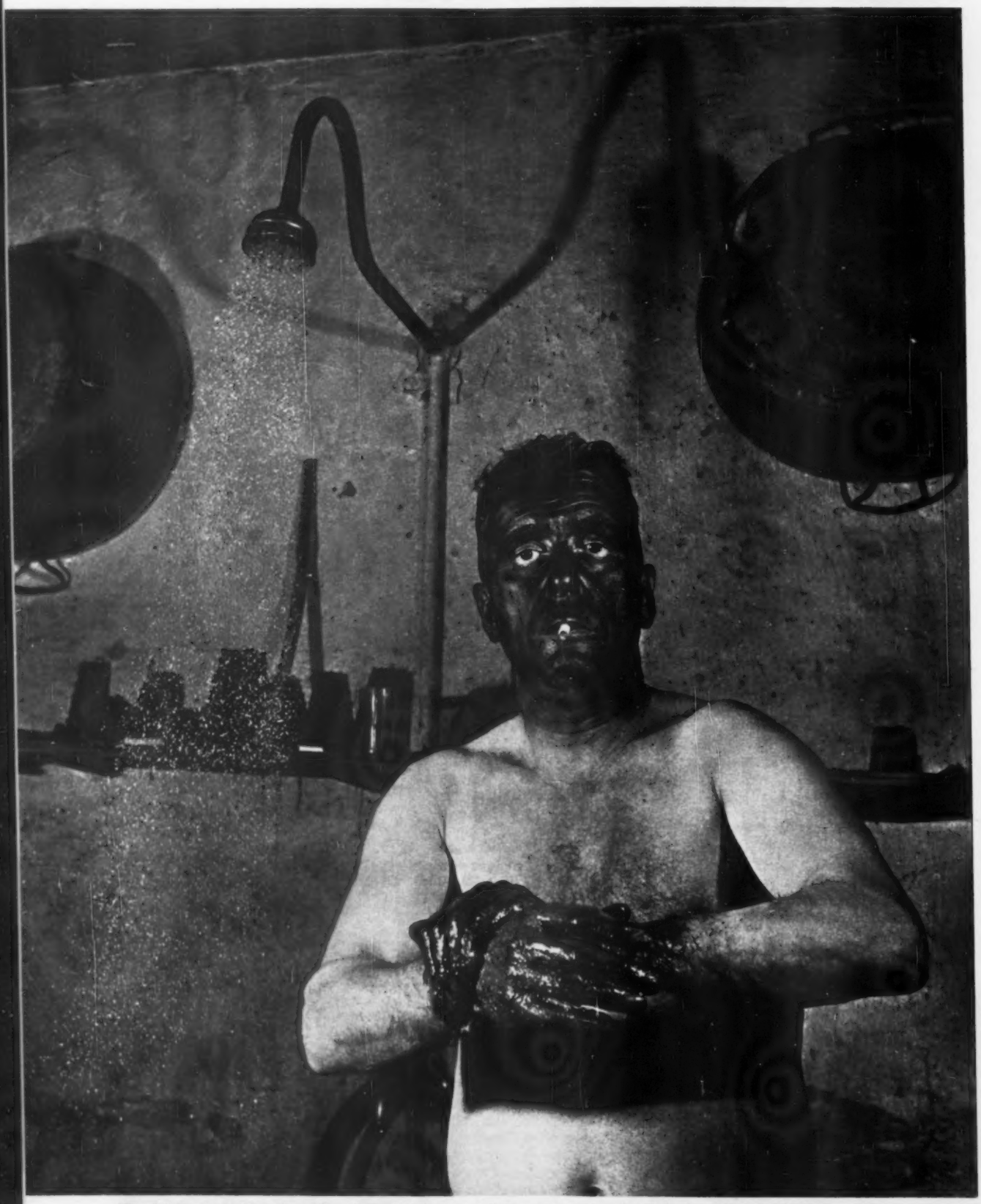
Reciprocity failure is a characteristic shared, to some degree, by all photographic materials, which can be defined as the inability of the film to respond efficiently to extremely short and/or extremely long camera exposures. (The reciprocity law states that density is always directly proportional to light intensity times exposure time. Like many man-made laws, however, this chemical-photographic law is observed more in the breach than the observance.) The faster the (*Continued on page* 124)

Check your reflector for proper coverage of picture area

Good coverage: when reflector is properly designed and is in good adjustment, light is spread evenly over the picture area.

Hot spot: one result of improper reflector adjustment is the concentration of excessive light in the center of the picture area.

Vignetting: reflector-beam spread is narrower than field of view of the lens, resulting in fall-off of light at edges of picture.



Max Scheler used the stark quality of direct flash to reveal these story-telling details in the life of a chimney sweeper.

FLASH PICTURES

Here are ten pages of good pictures demonstrating the wide range of picture-making possibilities with flash—both bulbs and speedlight. Think of the freedom that flash gives you as a photographer: the ability to shoot action at night, to illuminate gloomy corners with an amazingly portable and cheap form of intense light, to fill-in the shadow sides of objects, to document all kinds of life swiftly and with a brilliance that borders on the remorseless. Of course, flash can be badly abused. If not properly handled it will punch black holes into your pictures and build up chalky, overexposed highlight areas in your negatives. It can also produce a flat, glaring surface that destroys the sense of modeling. But used discreetly, with the lights properly placed or bounced, flash can be a miniature sun at the photographer's command both day and night—not a crutch to guarantee easy picture-taking, but a tool for seeing.—

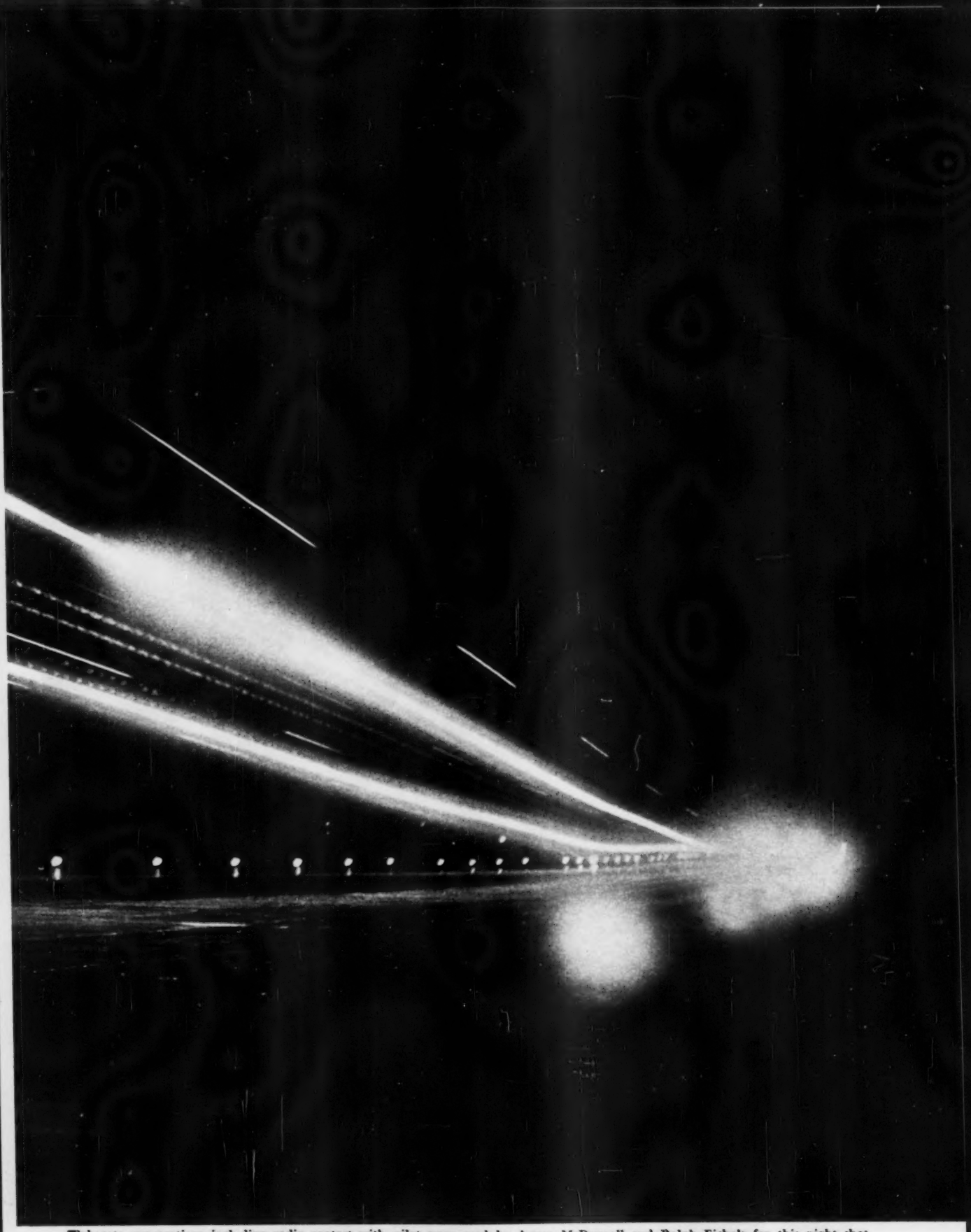
On an overcast day, Elio Ciol combined a dark-red filter with characteristic falling off in intensity of flash-on-camera. Result is night-like scene with poetic overtones.

SEE PAGE 151 FOR ALL TECHNICAL DETAILS PLUS LIGHTING DIAGRAMS

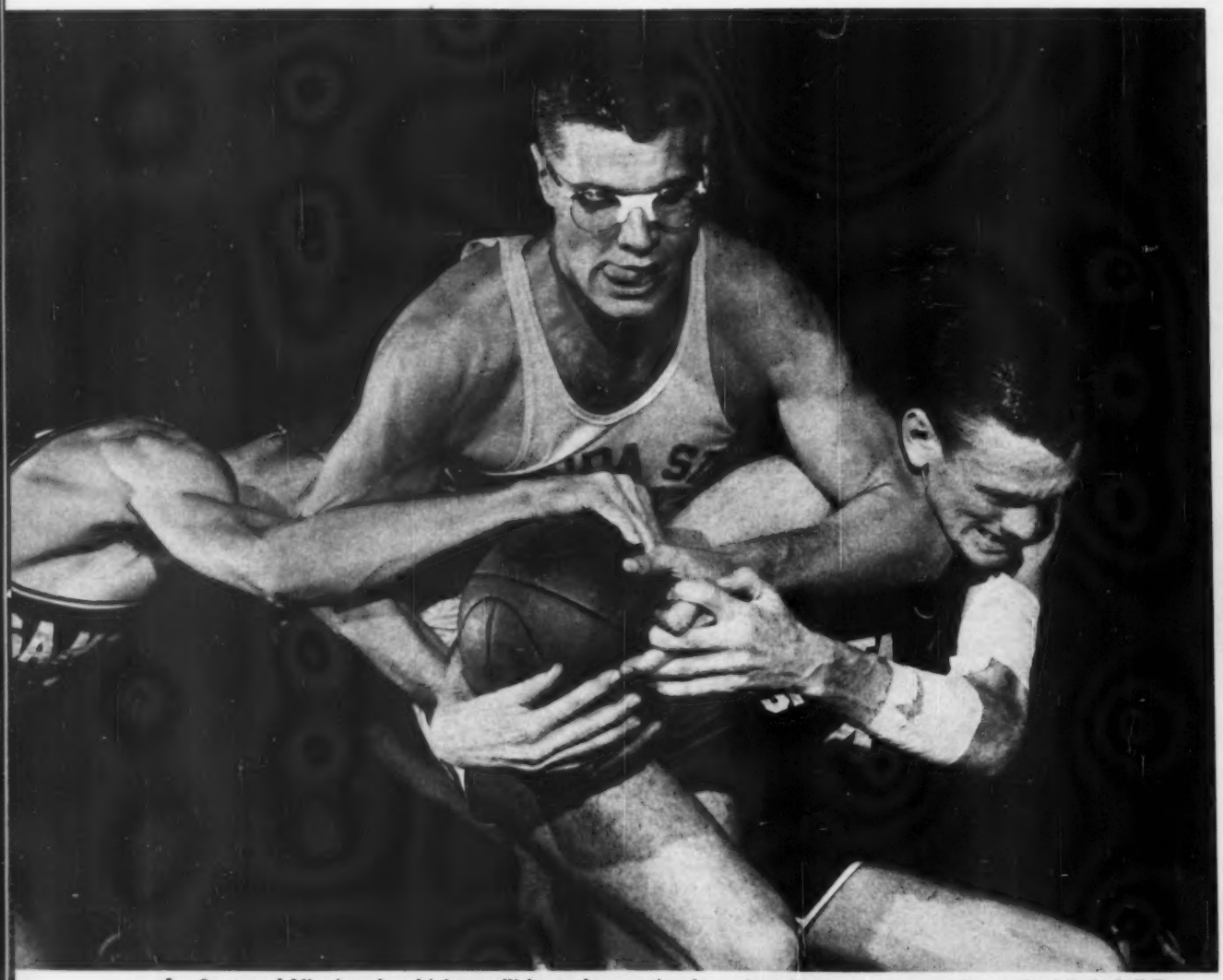
Using four speedlights, Philippe Halsman achieved a pure, almost shadowless high-key effect in this portrait of ingenue Carolyn Lee.

PICTURES continued

As at the end of all his sittings, Halsman asked Marina Vlady to jump in air. Speedlights captured action and her joyful expression.



Elaborate preparations including radio contact with pilot were used by Angus McDougall and Ralph Eicholz for this night shot.



Jay Spencer of Miami used multiple speedlights to freeze action faster than the human eye at an Orange Bowl Basketball Tourney.

Bounce flash gives a soft, natural light in Jacques Lowe's expressive portrait of arranger-composer Mitch Miller of Columbia Records.

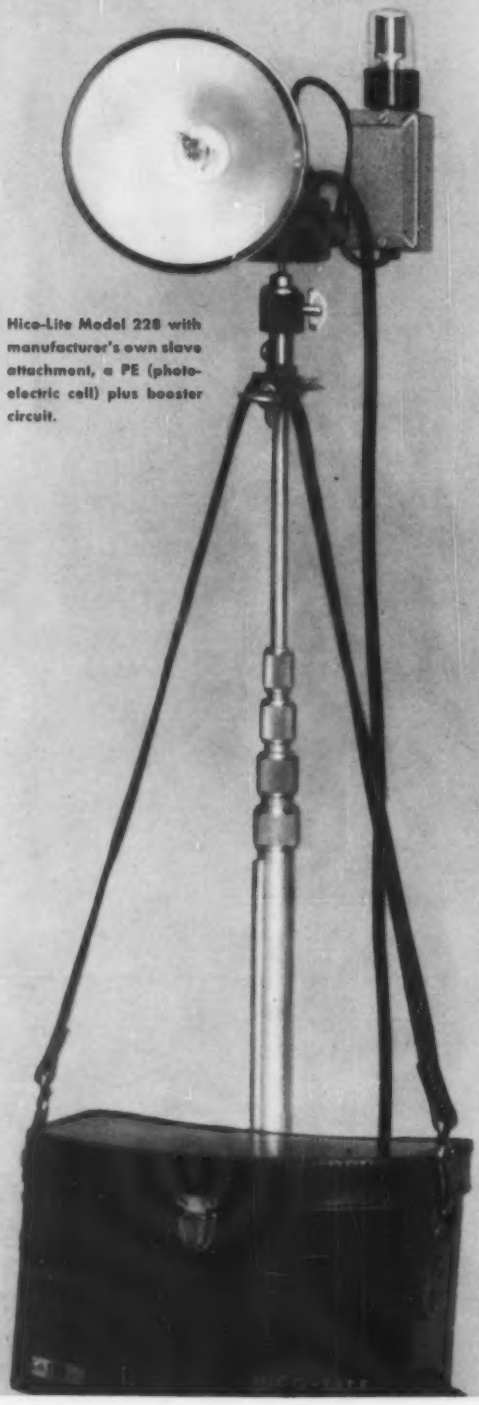
2
The Yellow Rose Of Texas
By DON GEORGE
March tempo
Voice
1 There's a yel-low rose
(2 Where the Ri-o Grande
(3 Oh,
know that
play the
And THE

Speedlight held high above photographer Robert Mottar's head caught the excitement of street crowd during Paris Bastille Day.

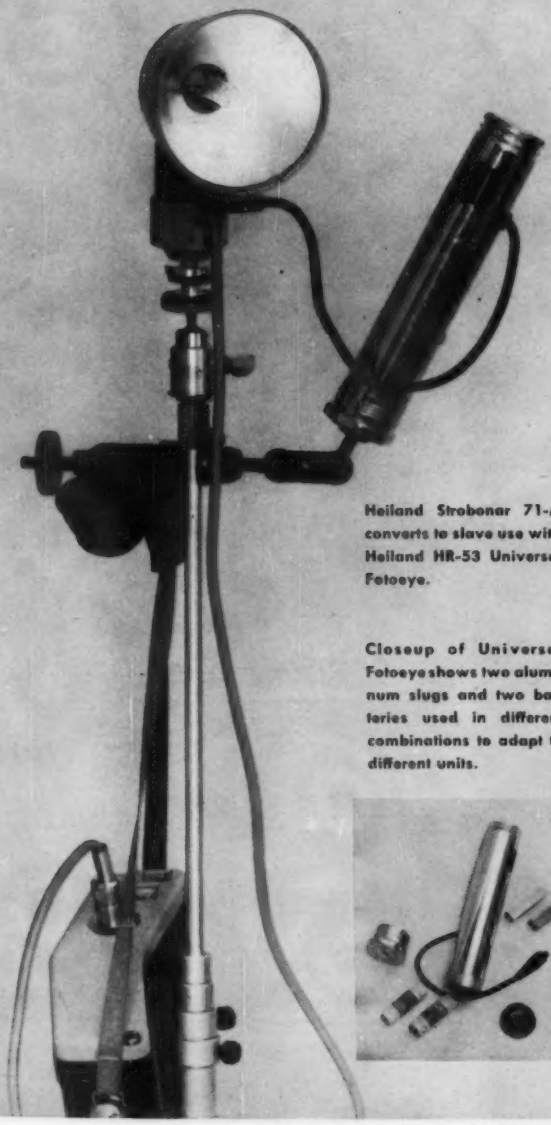
To shoot his self-portrait in a mirror, Willy Ronis combined flash bounced against ceiling with direct flash on his face.

For multiple-flash setups without cumbersome wires

TRY SPEEDLIGHT



Hico-Lite Model 228 with manufacturer's own slave attachment, a PE (photo-electric cell) plus booster circuit.



Heiland Strobonar 71-A converts to slave use with Heiland HR-53 Universal Fotoeye.

Closeup of Universal Fotoeye shows two aluminum slugs and two batteries used in different combinations to adapt to different units.

SLAVE UNITS

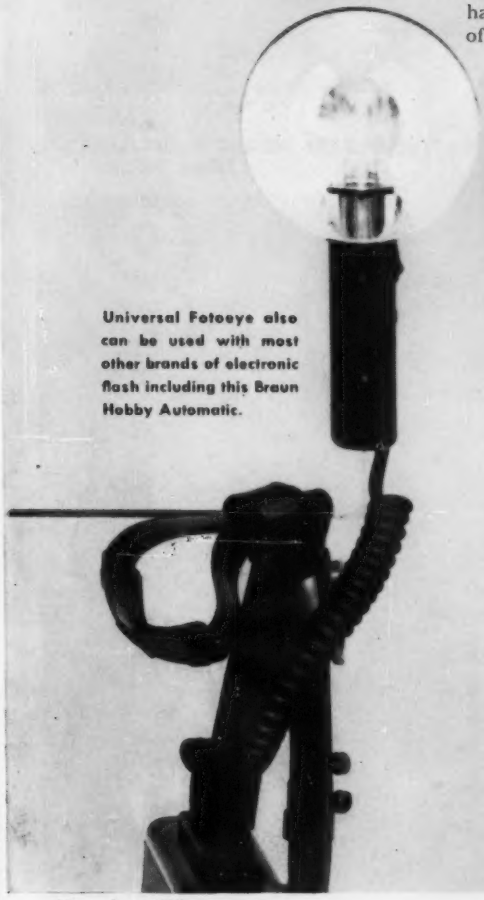
by RALPH CARROLL

Photographs by Herb Giles

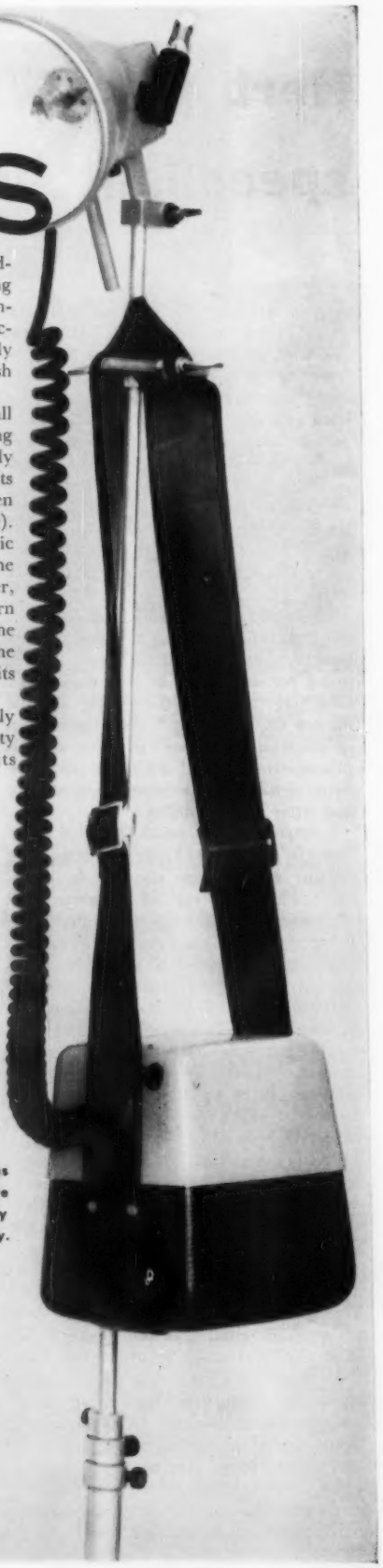
Despite the fact that most modern speedlights produce an instantaneous flash lasting only 1/1,000 sec, and many are considerably faster, any number of electronic-flash units can be made to flash in absolutely perfect unison to produce multiple-flash lighting effects.

One way of doing this is to connect all of the units together by means of long tripper cords which serve to trip not only the triggering circuits of the different units but a surprising number of people (even including an occasional photographer). Today, these entangling photoelectronic alliances have become as old hat as the external mechanical flash synchronizer, and just about as popular. The modern method, called *slave operation*, is to use the flash of a master unit (connected to the camera shutter) to trip the subsidiary units by means of photoelectric ("PE") cells.

The photoelectric cell is an extremely handy little device which has the ability of converting light energy striking its



Universal Fotoeye also can be used with most other brands of electronic flash including this Braun Hobby Automatic.



Graflex Stroboflash II has built-in circuit for slave operation, converts by addition of PE cell only.

Herb Giles demonstrates 3 ways to use speedlight slaves in your own living room

convex cathode plate into minute quantities of electrical current. You have probably seen PE cells opening and closing doors in railway stations and department stores and are aware that they are used to scan the sound tracks of motion-picture films. The PE cells used to control electronic-flash slave units differ from most PE cells (including the types used to actuate photoelectric exposure meters) in that they will respond only to a brief blast of light such as is produced by a flashbulb or an electronic-flash unit.

Light waves and electrical currents both travel at the maximum velocity known to exist in our universe: 186,000 miles per second. For this reason the time lag between the firing of the master flash unit and the response of its electronically obedient slave units is practically nil, and PE cells offer the twin virtues of maximum convenience and utter dependability.

Electronic-flash units employ two basically different kinds of triggering circuits which affect the use of a PE cell. The first type of triggering arrangement is based upon the thyratron tube, a sort of vacuum-tube switching arrangement which is so fantastically sensitive that the infinitesimally small currents required for its operation can be measured only with special electronic equipment. Because of this minimal current requirement, thyratron tube-triggered units may be operated directly by the PE cell which is plugged directly into the speedlight's flash contacts. Portable speedlights employing thyratron triggering include all Graflex Stroboflash units except the new Strobomite, and all Ascor Ascorlite units with the exception of Series 100 models.

Almost all other speedlights on the market today employ various forms of high-voltage synchronization (the exact voltages depending upon individual tube requirements). In almost all such cases the PE cell cannot be used directly with the flash unit but must work through an intermediate circuit arrangement usually consisting of a resistance and one or more very small capacitors. These intermediate circuits are usually small enough to fit into a small housing which serves as the PE cell base.

(*Continued on page* 132)

1

BOUNCE SLAVE TRIGGERED BY BOUNCE FLASH ON CAMERA

To eliminate eye shadows often caused by flash bounced from ceiling, use a slave unit for additional bounce fill as demonstrated by Herb Giles, below.

HIDDEN SLAVE TRIGGERED BY REMOTE PE CELL

2

To illuminate background room behind these dancing children, Giles concealed a slave unit around the corner. Unobtrusive trigger unit, virtually invisible in final picture, was taped to wall and connected to slave with extension wire.

3

MULTIPLE FLASH SETUPS WITHOUT MESSY WIRES

At left, extension wires clutter floor, pose a safety hazard in three-flash setup for group portrait. At right, Giles achieves the same illumination with slave units on lightstands, thus clearing floor space in front of the children.

the new Nikon SP

By BOB SCHWALBERG

THE NEW NIKON SP (P for *professional*) is in a very real sense a product of Nikon's seven years in America and the informal relationship which has been developed between the Nippon Kogaku design department and the working magazine and news photographers of the United States. The SP's two most significant innovations, a built-in universal viewfinder system and a compact electric motor-drive unit, were two of the most-wanted improvements suggested by U. S. professionals. Because we feel that this fourth Nikon model to appear since 1950 represents a significant milestone in miniature-camera design, we decided to submit the camera to the toughest kind of camera critics available: working magazine photographers.

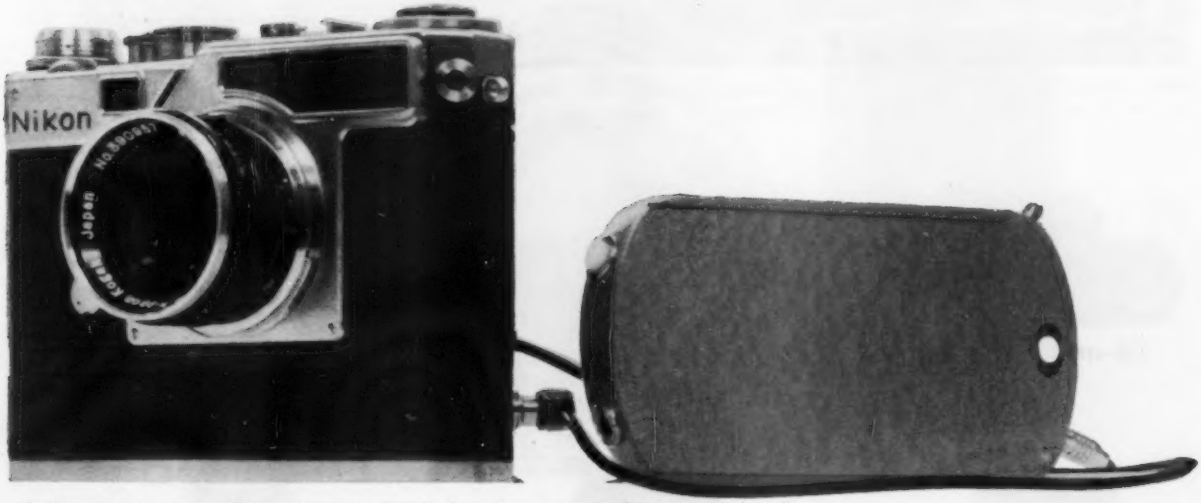
Our three guest experts are Ed Feingersh, a frequent contributor to these pages (see *Feingersh Covers Pulse* in last month's issue), Ray Shorr, whose entertaining and informative article on

Latest model Nikon has advanced design features including built-in universal viewfinder system, automatic parallax correction, improved flash synch, color-coded controls, more legible dials.

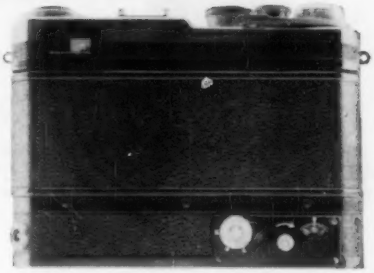
Motor drive fires camera continuously at rate of three frames per second for

It offers built-in universal viewfinder for six lenses,

electric-motor accessory for rapid-sequence shooting

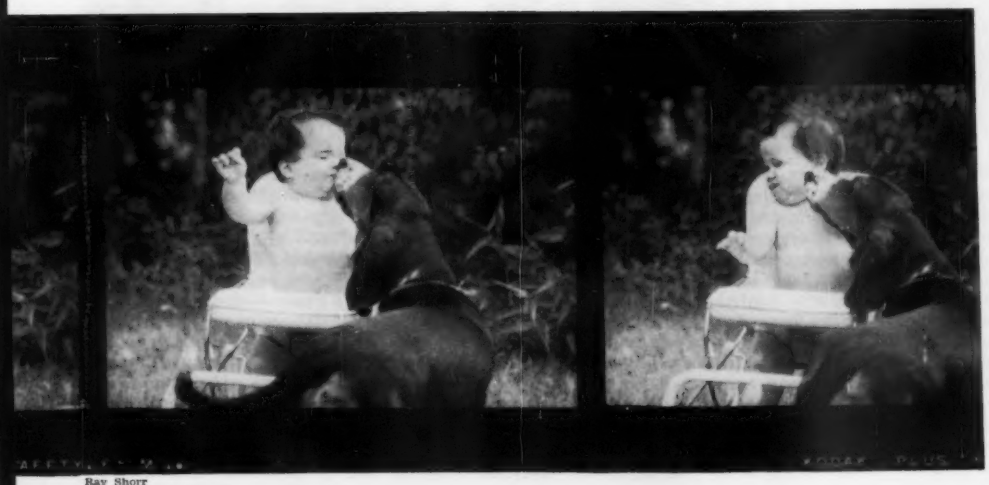


Optional electric motor-drive replaces standard back as shown, operates from six penlight cells in power pack (right). Motor may be operated semiautomatically or set for continuous firing.

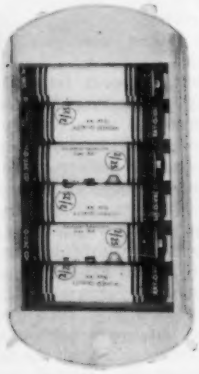


Rear-view of motor-drive unit on camera; controls and film-counter dial at lower right.

sequence pictures like these

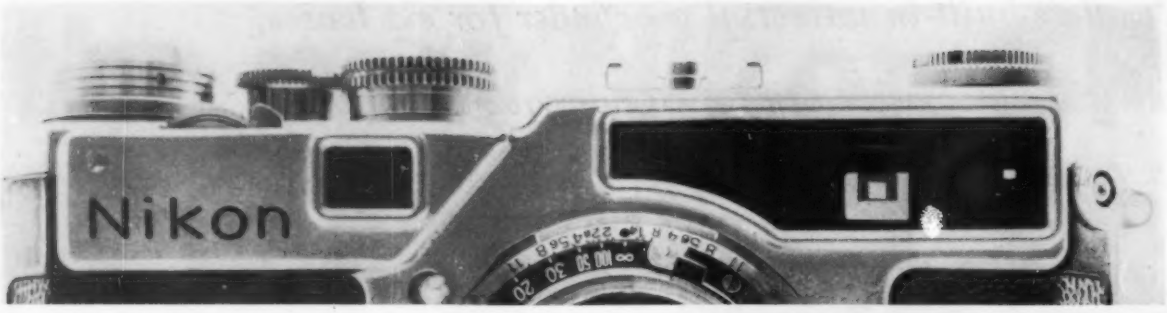


Ray Shorr

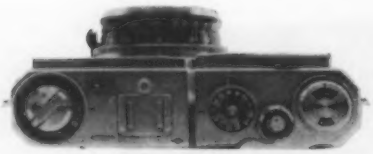


Six penlight cells nest inside a lightweight metal power pack.

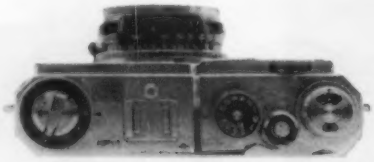
Nikon SP provides built-in viewfinding for these six lenses



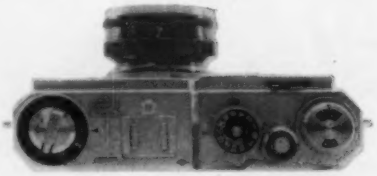
Detail of large viewfinder window which services combination range-viewfinder for 50-mm and longer lenses and separate window (viewfinder only) for 28- and 35-mm lenses. Dial at top of camera selects desired framing; parallax correction is automatic for 50-mm and longer lenses.



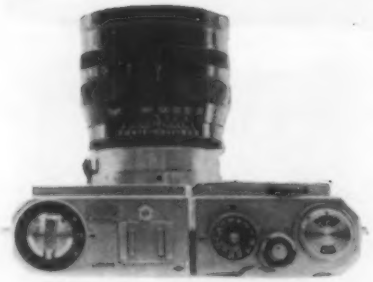
28-mm wide-angle



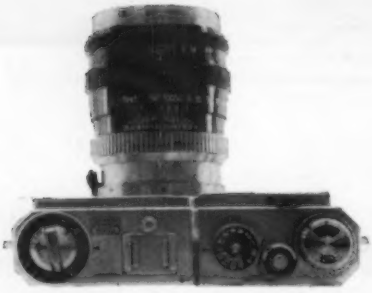
35-mm wide-angle



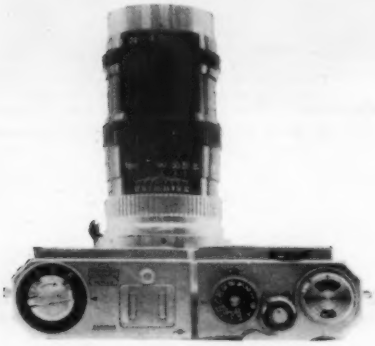
50-mm standard



85-mm long-focus



105-mm long-focus



135-mm long-focus

35-mm *For Duffers* appeared in our August 35-mm issue, and Larry Fried, who's been too busy catering to such clients as *Look Magazine* and *The Saturday Evening Post* to have done very much for us recently. Feingersh and Shorr are both Nikon men, while Fried uses M-3 Leicas.

First, however, let's take a look at the many interesting features of this new camera and its accessory electric motor drive for rapid-sequence photography.

1 *Built-in universal viewfinder system.* Lenses of six focal lengths are accommodated by two separate finders built close to each other within a single housing. Illuminated bright-line frames for the 50-, 85-, 105-, and 135-mm lenses surrounding the rangefinder spot in the center of the Nikon SP's combined rangefinder-viewfinder window are brought into position by a selector dial at the left-hand side of the top camera control panel. A separate Newton-type optical viewfinder is provided for wide-angle lenses, the complete image being the field of view for the 28-mm lens, an etched black-line frame showing the field covered by the 35-mm focal length. Eyepiece separation for the two finders is about 3/16 inch.

2 *Automatic parallax correction.* The bright-line frames for the 50- through 135-mm lenses continuously shift position as lenses of these four focal lengths are focused, giving completely automatic parallax correction from infinity to all near-focusing distances.

3 *Optional electric motor drive.* This accessory unit replaces the standard Nikon camera back, has its own pressure plate, body latch, etc. Operating from six 1½-volt penlight cells (total cost, 75 cents) housed in a gray metal case, the motor may be operated semiautomatically to trip the shutter as fast as the release button can be pressed, or set for fully-automatic, continuous firing, at the rate of three frames per second.

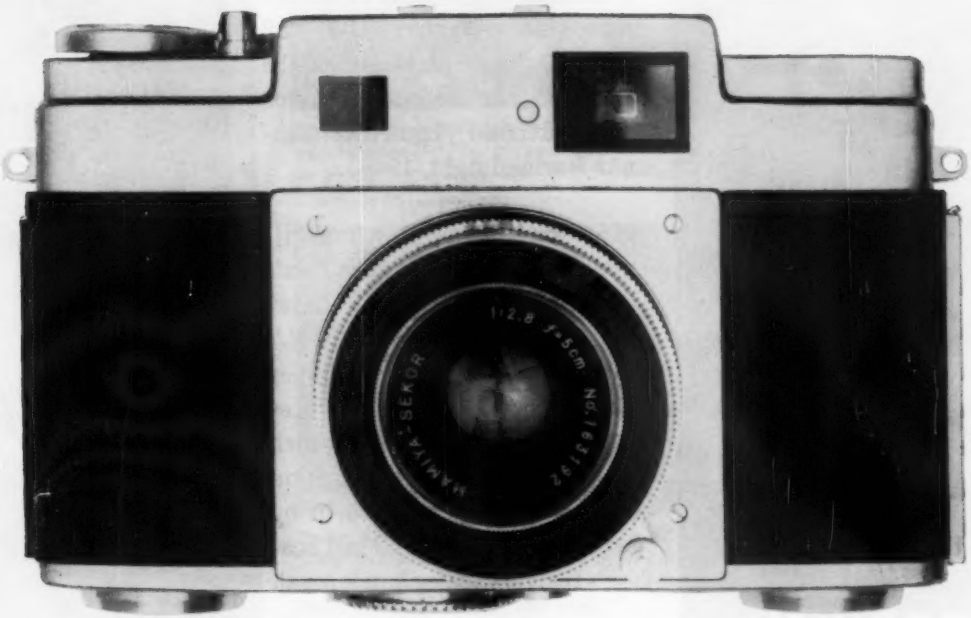
4 *New flash synchronization.* The SP synchronization setup provides a more versatile selection of shutter speeds for use with all classes of expendable flashbulbs, and the electronic-flash synchronizing speed has been increased from 1/50 to 1/60 sec. The synchronization desired is selected by pulling up on the knurled ring surrounding the shutter-speed selector wheel and rotating until the proper flash designation appears in a small window. All shutter speeds have been color-coded to match the appropriate synchronization settings in order to simplify selection and minimize accidental errors.

5 *Minor changes:* The Nikon SP has a new shutter-speed selector wheel with all speeds on a single click-stop dial which eliminates the danger of interfering with shutter movement by rubbing your fingers against the wheel during exposure, and makes possible the addition of a new clip-on exposure meter which will be offered as an optional SP accessory. A delayed-action self timer appears at

(*Continued on page* 145)

A POPULAR PHOTOGRAPHY EXCLUSIVE

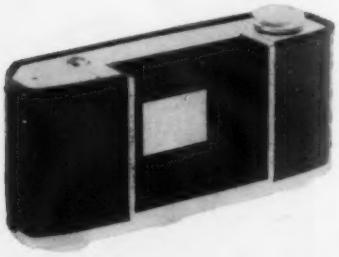
NEW 35 WITH INTERCHANGEABLE FILM MAGAZINES



Streamlined but conventional appearance of this sturdy camera body belies its double-unit construction.

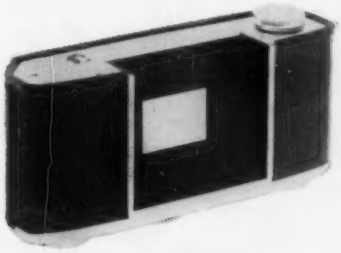
You can switch from color to black-and-white in less than 30 seconds with the Mamiya Magazine-35

Each magazine has a self-starting frame counter, and an automatic dark-slide that prevents film exposure when unit is removed from camera.



Lens-shutter assembly slides smoothly into magazine back, locks securely in position.

Back is detached by pressing a button and turning a wheel on its base. Section must be removed for rewinding and reloading of film.



The brand-new Mamiya Magazine-35 is a strong, well-finished, smoothly operating miniature camera which heads up a long list of photographic virtues with one of the most sought-after (but seldom seen) features ever wanted in a 35-mm camera: a system of quickly interchangeable magazine backs to permit rapid switching from black-and-white to color, or from one kind of film to any other kind.

Although this convenience has long been available to users of various types of larger-format cameras, to the best of our recollection, only two other 35s have ever acceded to this demand. One was the Kodak Ektra, a very expensive top-bracket design introduced in 1939 and discontinued little more than a year later when E-K shifted to war production. The other is the Adox 300 which was introduced at last year's Photokina (without a coupled rangefinder), and is not being imported into the U.S.

The Mamiya Magazine-35 is here today; its price is well within the current medium-price range; and it is an intelligently designed camera offering all of the latest wrinkles from a single-window rangefinder-viewfinder system, to a one-stroke rapid-advance lever. But the most impressive feature of this latest product of one of Japan's oldest and most original precision camera manufacturers is not simply the fact that it offers a system of interchangeable magazines, but the precise and practically foolproof method that has been employed in its construction.

Any system of interchangeable camera backs must adhere to a number of very

(*Continued on page* 133)

G-E FLASH NEWS

World famous sports photographer

HY PESKIN*

tells how to shoot sports pictures with G-E #5 Flash Bulbs

"The most important element in shooting action pictures is anticipation," says Hy Peskin, the man who used three G-E #22 Flash Bulbs to shoot one of the first color action sports photos ever published (Lou Nova-Gunnar Barlund fight, 1946).

"In sports, analyze what will happen next—and *be* there. Don't watch the game as a spectator, but as a 'second manager'." That's how this two-time winner of the "Best Sports Picture of the Year" captured on film such famous events as the attack on Umpire George Magerkurth by a spectator (1939) and last season's Dodger-Redleg battle royal.

"The *ideal* action shot should be governed by *four* basic rules:

1) Let the action come to you.
2) Shoot for peak of action.
3) Shoot low, and close.
4) Shoot for composition.

"For these basketball shots, I used a Minolta 120 mm with Tri-X film—and G-E #5 Flash Bulbs. I shot each one of the action pictures exposed for 1/500 at f/11. This gave me plenty of light at high shutter speeds to 'freeze' action—and at small aperture for greater depth. I'd recommend these bulbs with *any* kind of camera for action shots."

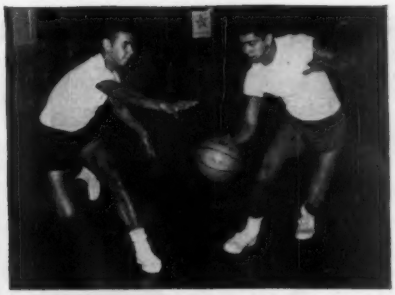
**Roving sports photographer for LIFE, SPORTS ILLUSTRATED, SATURDAY EVENING POST.*

FOR SHARPER, BRIGHTER PICTURES, INSIST ON FLASH BULBS BY

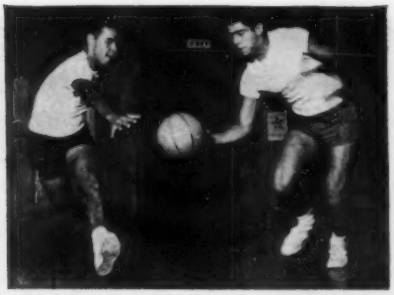
GENERAL ELECTRIC

Let the action come to you—then shoot for peak of action! "This is an exciting picture because I didn't gamble—I *anticipated* the action. The youngster on the left with arm out-thrust and the player in mid-air are at the peak of their moves. A single G-E #5, 8 feet off to the left, heightens the impact with contrasting background and strong

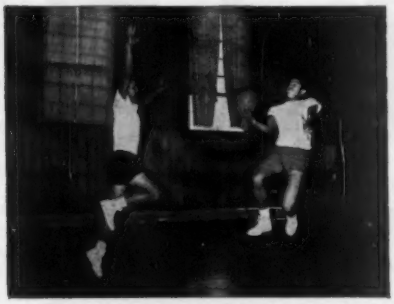
shadows. Slightly blurred feet accentuate the feeling of movement. My position was close to the sideline. I trained my camera on an area arcing from back-court, past the foul line to the basket. I followed the ball – waited for the players to come into camera range, then shot at the peak. A split-second too soon, and the result would have been ordinary."



Shot from standing position – lacks excitement! "The players appear to be glued to the floor. Everything looks two-dimensional."



Shot from kneeling position – *this* is more like it! "There's an illusion of 'flight-through-space'. You can even see the sole of a sneaker."



Poor Composition—"In basketball, your subjects are almost always close together at peak of action. This picture was shot *before* the peak."

Good Composition—"If you shoot right at the peak of action, as in this sportrait, your composition problem practically solves itself."

(above) Wrong! Shot with bulb-on-camera—"Players in foreground are 'burnt-up,' having gotten the bulk of the flash—while the others are progressively shrouded in shadows."

(below) Right! Shot with a single G-E #5 off-camera—"Bulb faces the center player for even light distribution. Exposed for 1/50 at f/22. An angle shot is most effective for team pictures."

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Realist inc.

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Radio Controlled Flash

(*Continued from page* 89)

dragged behind them like a long pigtail.

Between the time I dreamed of the control unit and the assignment to build a practical working model, several manufacturers had tried their hands at manufacturing and marketing such units. However, most everyone had defects that made working with flashbulbs extremely difficult and haphazard. Moreover, none of these units was ever meant to be used with electronic flash.

Our first move was to find an electrical engineer who both understood photography and the problems involved in photographic electronic-flash synchronization. Gordon Jacques, a young engineer from the Brooklyn Polytechnical Institute, turned out to be the man we were looking for. He started working with us in 1953.

After a few weeks, Jacques sat down with Al Schneider, our electronics expert, and myself for a discussion about the problems facing us.

First, a band had to be chosen for the radio signal. (Choosing the wrong band might mean that the buzz from a telephone line could set off the electronic-flash units.)

Second, since the unit had to be compatible with every X-synchronization system, on every camera and electronic-flash unit used by *Life*, the least idiosyncrasy in any one had to be taken into consideration. (If the unit didn't operate with any one camera or flash unit, it would not be acceptable to *Life*.)

Third, the transmitter unit had to be light enough so it could easily be carried by a working photographer, and small enough so it would not be conspicuous.

These were the major problems.

Much to our amazement, Jacques came up to the *Life* lab three months later with a completed transmitter and receiver. That same evening, we tested the unit.

Basically, here's how the unit worked. A cord was attached to both the camera shutter and the transmitter. When the shutter release was pressed, a radio signal was sent from the transmitter. Immediately, the signal was picked up by the receiver, which made contact and set off the electronic-flash units. The range of use of the system was several hundred yards.

After the first few shots the unit seemed to operate perfectly. Then, someone had switched on the fluorescent light and the units began firing. Due to the design of the unit the "noise" from lights, from motors starting, and other electrical devices

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AO 300	46.50
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Brumberger Rocket	39.50
Brumberger Riviera 2¼ x 2¼	39.50
Graflex Constellation	68.50
LaBelle Producer	69.00
Revere 553	63.60
Revere 8880	120.45
Signet 300	44.75
Signet 500	54.50
TDC Duo 300	49.95
TDC Headliner	42.50
TDC Model D	59.00
TDC Duo 500	62.00
TDC Stereo	112.00
TDC Stereo Viewer	107.50
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Viewlex Projectomatic	59.50

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Exclusive. Brand new. Famous make. Imported **light-weight prism** binoculars.

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Imported **feather-weight WIDE-ANGLE** binoculars.

7 x 35	57.00
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10 x 50	69.75
20 x 60	88.00

Add 10% Excise Tax to above prices.
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LENSES

For LEICA, CANON, Tower, Leotax, Kardon, and Similar Cameras

25mm f3.5	$129.50	50mm f2.5	39.50	135mm f3.5	69.50
25mm f4	124.50	85mm f2	132.00	150mm f3.5	195.00
28mm f3.5	88.88	85mm f1.5	149.50	150mm f2.3	295.00
28mm f2.8	109.50	85mm f1.9	129.50	150mm f2.8	371.00
28mm f5.6	79.00	85mm f2.8	59.50	150mm f3.5	160.00
28mm f6.3	77.00	85mm f1.5	139.50	180mm f2.5	299.50
35mm f1.7	179.50	85mm f2.8	59.50	180mm f5.5	59.95
35mm f1.8	134.50	90mm f2.5	79.00	200mm f4.5	117.00
35mm f2	115.00	90mm f4	29.95	250mm f5.5	93.50
35mm f2.5	74.50	90mm f1.8	115.00	300mm f5.6	97.50
35mm f2.8	74.50	100mm f4	82.50	400mm f5	414.00
35mm f3.5	63.50	100mm f3.5	42.50	500mm f5	412.50
50mm f1.1	249.50	105mm f2.5	115.00	640mm f5	656.00
50mm f1.2	199.50	135mm f4	99.50	800mm f8	660.00
50mm f1.5	115.00	135mm f3.5	99.50	1000mm f6.3	937.00
50mm f2	44.00	135mm f4	55.00		
50mm f1.4	149.00	135mm f4.5	47.50		

For Contax I, II, III, IIa, IIIa, Nikon S1, S2 and similar cameras

21mm f4.5	$149.50	85mm f1.5	224.00	250mm f4	243.00
25mm f4	127.00	85mm f2	124.50	300mm f4	346.25
28mm f3.5	112.00	85mm f4	79.50	300mm f5	183.75
35mm f2	138.00	90mm f3.5	63.75	300mm f5.6	112.43
35mm f2.5	105.00	105mm f2.5	114.35	400mm f5	179.95
35mm f1.8	136.00	125mm f2.3	145.95	400mm f5.6	174.95
35mm f3.5	67.00	135mm f3.5	101.25	500mm f5	408.25
50mm f1.1	249.50	135mm f3.8	76.43	500mm f8	626.25
50mm f1.4	115.00	135mm f4	109.50	600mm f5.6	521.25
50mm f1.5	79.50	150mm f1.8	371.25	640mm f5	656.25
50mm f2	55.50	150mm f2.3	396.25	800mm f5.5	787.50
50mm f2.8	49.50	150mm f3.5	89.95	1000mm f6.3	937.50
50mm f3.5	46.50	180mm f2.5	310.00		
75mm f1.5	131.00	180mm f2.8	940.00		

For EXAKTA, CONTAX D, PRAKTICA, Contax S, Consul, Exa, Praktina, Pentacon, Praktiflex, Rival Reflex, Hexagon, Hexagon Supreme, and similar Cameras.

28mm f3.5	$ 87.95	90mm f2.8	189.50	180mm f3.5	99.50
35mm f2.5	57.50	90mm f3.5	58.50	180mm f4.5	72.00
35mm f2.8	109.50	90mm f4	19.95	180mm f5.5	97.00
35mm f3.5	46.50	100mm f2.8	41.50	200mm f4.5	115.00
35mm f4.5	39.50	100mm f3.5	25.85	240mm f5.5	93.00
40mm f3.5	37.50	100mm f4.5	13.85	250mm f5.5	79.50
40mm f4.5	33.50	105mm f3.5	89.95	300mm f3.5	170.00
50mm f1.5	123.50	105mm f4.5	19.95	300mm f4	329.50
50mm f1.9	58.50	125mm f2	119.50	300mm f5	145.00
50mm f2	47.50	125mm f2.3	146.25	300mm f5.5	104.75
50mm f2.8	9.95	135mm f3.5	134.65	300mm f5.6	129.00
50mm f2.9	9.95	135mm f2.8	112.50	360mm f5.5	112.00
58mm f2	44.50	135mm f3.5	38.95	400mm f4.5	270.00
75mm f1.5	94.50	135mm f3.8	34.95	400mm f5	183.00
75mm f1.9	58.50	135mm f4	48.00	400mm f5.5	104.50
80mm f2	74.50	135mm f4.5	29.95	500mm f5	296.24
80mm f2.8	94.50	150mm f1.8	256.00	500mm f8	356.25
85mm f1.5	93.35	150mm f2.3	295.00	600mm f5	423.75
85mm f2	69.50	150mm f3.5	98.00	640mm f5	543.75
85mm f2.8	47.50	150mm f5.5	65.50	800mm f5	871.25
90mm f1.8	112.50	165mm f3.5	148.00	800mm f6.3	562.50
90mm f2.5	74.50	180mm f2.8	229.50	1000mm f6.3	828.00

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FOR PRACTICALLY EVERY CAMERA — Partial listing

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Ansco Memar	Classic 35	Kodak Retinette	Perfex
Ansco Regent	Contax	Kodak Retina I, II, IIA	Polaroid 80, 80A
Ansco Speedex	Contaflex III, IV	Kodak Retina IIc, IIIc	Polaroid 95, 95A
Ansco Viking	Contina	Kodak Signet 35, 40	Polaroid 95B, 700
Argus A, AA, AF	Contessa	Kodak Tourist	Polaroid Pathfinder
Argus A-3, K, 21	Contina	Konica I, II, III	Praktica
Argus C, C-2, C-3	De Jur	Leica	Praktiflex
Argus C-4, C-44	Diax Ib, IIb	Leotax	Praktina
Asahiflex	Edinex	Lordomat	Samoca 35
Baldina	Edixa A, B, C, D	Lordox	Speed Graphic
Bauer	Eumig	Mamiya 6	Soligor, Soligor 66
Bell & Howell	Exa	Mamiyaflex	Super Baldina
Bolex B8, H16	Exakta	Mansfield	Super Ikonta A; B
Bolsey B, B-2	Flexaret	Mercury II	Super Ikonta
B22	Graflex 22	Minolta A, AII	BX, III
Bolsey C, C-22	Graphic 35	Minolta Autocord	Voigtlander Bessa
C-3	Ikoflex I, Ia	Minolta Autocord L	Voigtlander Vito
Bolsey Explorer	Ikoflex II, IIa, III	Wollansak	Walzflex
Bolsey Jubilee	Ikoflex Faforit		
Bower X, 35	Kalimar B		
Canon			

Wide-Angle lens	only $14.95 incl. case
Telephoto lens	only $14.95 incl. case
Both lenses together	$24.50 incl. case
Lenses for most Stereo cameras, set of 2 lenses	$24.50 incl. case
Lenses for most Stereo cameras, set of 2 wide-angle and 2 telephoto lenses	$48.00 incl. case
For reflex cameras, set of 2 lenses	$24.50 incl. case
For reflex cameras, set of 2 wide-angle and 2 telephoto lenses	$48.00 incl. case

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Argus L-44	13.50
Sixon	9.95
Sixtomat X-3	19.95
Gossen LV-SIX	*
G. E. P. R.-1	19.00
G. E. Guardian	24.75
Leica Meter 2	12.00
Leica Meter 3	14.40
Leica MC meter	26.40
Norwood Director S	22.50
Weston Master III	22.50
Weston DR	11.50
Kalimar A1	5.50
Kalimar B1	9.00
Kalimar Clip-on	6.25
Walz Color Meter	29.95
Walz Corona	7.50
Walz Coronet	7.50
Ikophot Rapid	19.95
Sekonic Leader Delux	6.40
Alpex	5.95
Sekonic Compact	6.40
Bewi automatic	19.25

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Imported flash gun	1.99
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Heiland Foto-Mite	7.50
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Ultrablitz Expert IV	39.00
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Ultrablitz Rocket D	74.50
Ultrablitz Rocket WL	99.50
Ultrablitz Supreme	149.50
Mecablitz	35.95
FR Model 2	34.00
FR Model 140	21.95
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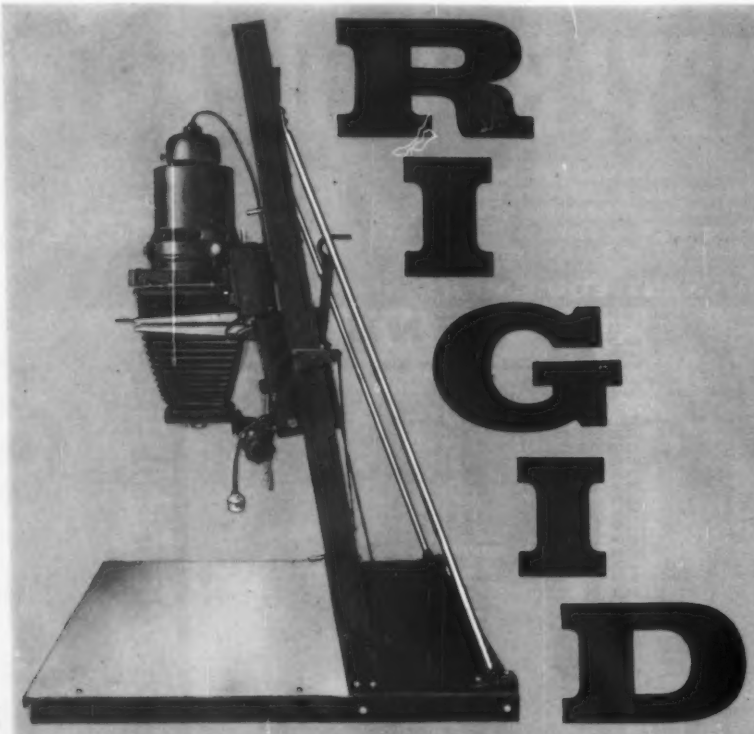

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could cause the flash tubes to go off.

Jacques went back to work again. This time, after a year of research, testing, designing, and building, he came back with another unit which was designed to be used on VHF.

Our practical tests began again. We switched on lights, rang telephones, turned the TV dial quickly, and shot with every camera and electronic-flash unit in our lab. The units worked perfectly. Everyone was happy. We thought our work was over.

One matter, however, could not be solved mechanically. Since the band we were using was on VHF, *Life* had to have a license from the Federal Communications Commission to operate the unit. We applied for a license but we were turned down. Only individuals could get licenses. This meant that all of our photographers would have to have a ham operator's radio license to take pictures. So we called Jacques in again. Now, Jacques had to start over again and design a unit that would operate on the "citizens band" where no licenses were necessary.

The "citizens band" was by far the most cluttered of them all. Jacques had his work cut out for him.

During the last few months of 1956, Jacques brought another unit into our lab. It operated excellently with every camera but one. The shutter of this camera had a wipe too fast to synchronize with the unit and electronic flash.

In the spring of 1957, Jacques had the unit operating on the "citizens band" with everyone of our cameras. The work was over.

What did we accomplish? This might best be told by retelling the story about how Ralph Morse, one of *Life's* outstanding photographers, took the radio control and our giant electronic-flash units to Madison Square Garden to shoot *Life's* first assignment with the new equipment —Billy Graham's Crusade meeting.

Morse, with the help of his assistants, spent an afternoon bringing condensers and big flash tubes to the top of Madison Square Garden. Four flash tubes, each with four 800-watt-second units hooked into them, were carefully positioned. Two were placed at the back, left of the Garden, another was aimed to cover the choir, and the fourth was suspended from the ceiling to send light down directly upon Billy Graham.

When the meeting started, Morse, with only the transmitter hanging from his shoulder, proceeded to move about the Garden with his 4x5 Speed Graphic shooting pictures as if he were using a 35-mm camera under available-light conditions. (Once he sat down next to a member of the choir, who asked him, "Where's the photographer who's shooting with those big lights?")

In the hands of an imaginative photographer like Ralph Morse, the problem of synchronizing wires, or a flash aimed to set off units through photoelectric cells, would never again limit his picture-taking. He could now go out and take greater pictures because another technical limitation was destroyed. *Life* could now go out and get pictures no one had ever seen before.—

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with Genuine IHAGEE PENTA PRISM, with Split Image RANGEFINDER *AND*

- f2.8/Automatic WESTANAR ....ONLY $169.50
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• Single Flashposts for Strobe, Regular FP bulbs—newly engineered shutter, fully redesigned Slow-Speed & Delay Mechanism—Accidental Exposure Prevention even with Penta Prism in Camera. BODY ONLY: $115.00.

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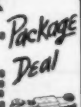

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Built-in Lightmeter coupled to L.V.S.; Autom. diaphragm control, Split Image Rangefinder, built-in self-timer, L.V.S. Rapid Winder, MXV.

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	List Price	Our Price
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Kodak Retina Longar Tele	80.00	54.50
Retina Curtar F4/35mm	80.00	54.50
Kodak Curtar W.A. Lens	59.00	42.50
Kodak 35/80mm Optical Finder	15.50	11.95
Kodak Retina E. R. Case	14.50	9.95

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35mm/f3.5 AUTOMATIC Wide Angle

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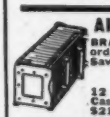

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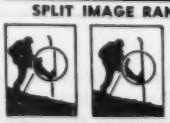

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Ihagee Eveready Case	12.00	8.95
Ihagee Deluxe Eveready Case	15.00	10.95
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f1.8 90mm Angenieux	149.50	105.00
f2.5 90mm Angenieux	94.50	63.95
f2.5 135mm Angenieux	179.50	125.60
f3.5 135mm Angenieux	89.50	63.00
f4.5 180mm Angenieux	96.00	68.00
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f2.8 35mm Flectagon Autom.	149.95	105.00
f2 58mm Biotar Autom	165.00	106.50
f2.8 50mm Tessar, Autom	100.00	69.50
f1.5 75mm Zeiss Biotar PS	216.50	139.50
f4.0 135mm Zeiss Triotar PS	85.00	62.50
f2.8 180mm Zeiss Sonnar PS	395.00	219.50
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f2.8 50mm Westanar Autom.	$ 69.50	$ 49.50
f2. 50mm Westagon Autom.	110.00	77.00
f3.5 135mm Westanar PS	79.50	44.50
f4.5 135mm Westanar PS	69.50	39.50
f4.5 180mm Westanar PS	89.50	49.50
EMNA		
f3.5 28mm Ultra W.A. PS	120.00	69.50
f2.5 35mm Super W.A. PS	99.50	54.50
f3.5 35mm Wide Angle PS	79.50	44.50
f3.5 135mm Tele Clickstop	79.50	32.50
KILFITT		
f3.5 40mm Microkilar E	89.95	62.95
f3.5 40mm Microkilar D	114.95	80.45
f2.8 90mm Microkilar	269.95	189.50
f3.5 150mm Tele-Kilar PS	167.50	117.25
f5.6 300mm Tele-Kilar PS	199.50	139.50
f5.6 400mm Fern Kilar	289.00	202.50
f5.6 600mm Fern Kilar	629.00	440.00
SCHNEIDER		
f1.9 50mm Xenon Autom	169.50	109.00
f3.5 135mm Tele-Xenar, Autom	144.50	99.50
f5.5 200mm Tele-Xenar PS	124.50	87.50
f5.5 360mm Tele Xenar PS	214.50	150.50
STEINHEIL		
f3.5 40mm Cassaron	54.50	38.50
f1.9 55mm Quinon Auto	169.50	109.50
f2.8 85mm Culminar	65.00	45.50
f2.8 135mm Quinar, PS	149.50	99.50
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New line of German films hits the U.S. market

Five Perutz films range from superspeed to superlative image quality

Perutz films (and plates) have been made and admired for almost as long as there have been photographers to puzzle over the best exposure or forget to remove their lens caps. Back in the early days when the photographic industry was almost entirely dependent upon independent researchers, the firm of Otto Perutz of Munich, Germany, was one of the first photographic manufacturers to realize that continuous in-plant research by first-rate scientists working in fully equipped laboratories was an integral part of film manufacture, along with coating machines and all of the other paraphernalia of film production. The process of luring scientific brains out of the universities and into the factories has, of course, continued down to the present day, as have the Perutz films.

One of the films, the invention of two

(*Continued on page* 152)

	Manufacturer's ASA Index (Daylight)	DESCRIPTION	PRICING and AVAILABILITY: 120 620 127 Rolls	35-mm 20-Ex.	35-mm 36-Ex.
PEROMNIA 25	250	High-speed film with increased red sensitivity.	.50	.85	$1.10
PEROMNIA 21	100	Medium-speed general purpose film of faster type.	.50	.85	$1.10
PERPANTIC 18	50	Medium-contrast thin-emulsion films; very pushable.	.45	...	.....
PERPANTIC 17	40		...	.85	$1.10
PERGRANO 14	20	High-acutance maximum quality ultra-fine-grain thin-emulsion film.	...	.85	$1.10

CALENDAR
OF EXHIBITIONS

*Conducted according to the recommended practices of the Photographic Society of America.

13th Chicago International Color Slide Exhibition*, Chicago Color Camera Club, Chicago, Illinois.
Closes October 7, 1957.
Entry fee $1, four slides allowed.
On exhibit at Chicago Museum of Science and Industry, Jackson Park, Chicago, on October 26, 27 and November 3, 1957.
For information and entry blanks, write George M. Wood, 31 Ash Street, Carpentersville, Illinois.

4th Salon of Nature Photography, New York State Museum, Albany, New York.
Closes October 26, 1957.
No entry fee, four prints allowed.
On exhibit at New York State Museum, Albany, from November 1 to December 31, 1957.
For information and entry blanks, write W. J. Schoonmaker, New York State Museum, Albany 1, New York.

17th Annual Exhibition of Nature Photography, The Kentucky Society of Natural History, Louisville, Kentucky.
Closes October 29, 1957.
Entry fee $2, prints, $1.25, slides. Four prints and/or slides allowed.
For further information and entry blanks, write Ruby Green, 1530 Starks Bldg., Louisville 2, Kentucky.

30th International Exhibition of Photography, Lincoln Camera Club, Lincoln, England.
Closes November 2, 1957.
Entry fee $1, number of slides and prints on request.
On exhibit at Usher Art Gallery, Lincoln, From November 30 to December 29, 1957.
For information and entry blanks, write D. Lee, Lincoln Camera Club, 18 Claremont Street, Lincoln, England.

5th Evansville International Color Slide Exhibit*, Fine Arts Camera Club, Evansville, Indiana.
Closes November 4, 1957.
Entry fee $1, four slides allowed.
On exhibit in Evansville November 17 and December 5, 1957.
For information and entry blanks, write Dorothy Lukemeyer, 825 Line Street, Evansville, Indiana.

9th Annual Chicago Lighthouse International Exhibition of Stereo Photography, Chicago Lighthouse for the Blind, Chicago, Illinois.
Closes November 16, 1957.
Entry fee $1, four slides allowed.
On exhibit from December 9 to December 12. Place to be announced.
For information and entry blanks, write Frederick T. Wiggins, Jr., 438 Meacham Avenue, Park Ridge, Illinois.

23rd Annual Salon of Photography, Des Moines YMCA Movie and Camera Club, Des Moines, Iowa.
Closes November 23, 1957.
Entry fee $2, four black-and-white prints allowed.
On exhibit at Edmundson Memorial Art Center, Des Moines, from December 18, 1957 to January 12, 1958.
For information and entry blanks, write E. G. Flatley, YMCA, 4th and Keo, Des Moines, Iowa.

18th International Photographic Salon of Japan*, All Japan Association of Photographic Societies, Tokyo, Japan.
Closes November 30, 1957.
Entry fee $1, four prints and/or slides allowed.
On exhibit at The Galleries of Mitsukoshi, Tokyo, during February, 1958.
For information and entry blanks, write Salon Secretary, 18th International Photographic Salon of Japan, Asahi Shimbun Bldg., Yurakucho, Tokyo, Japan.

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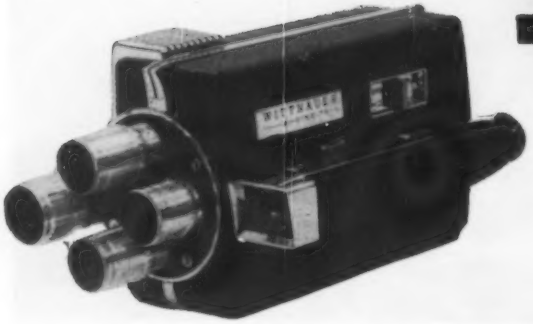
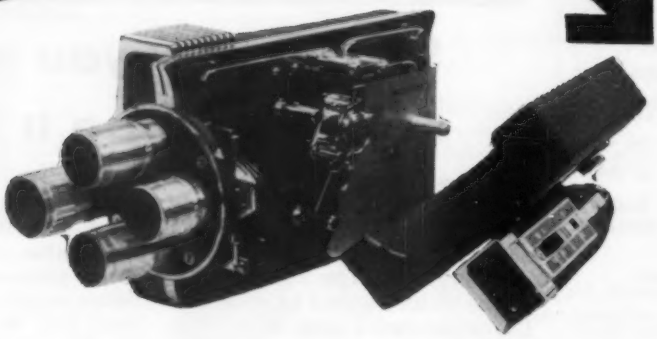
The Wittnauer Cine-Twin —a revolutionary CAMERA-



1

This is the Wittnauer 8-mm Cine-Twin camera which has 3 taking lenses, a projection lens and zoom finder.



2

Side is removed by simply pressing button to open position. Note reel-holding arms folded into top of camera.

3

Camera is ready to be placed on base which contains motor, cooling system, and all projector controls.

In 30 seconds an 8-mm camera is transformed into a 300-ft reel capacity, 400-watt 8-mm projector

PROJECTOR

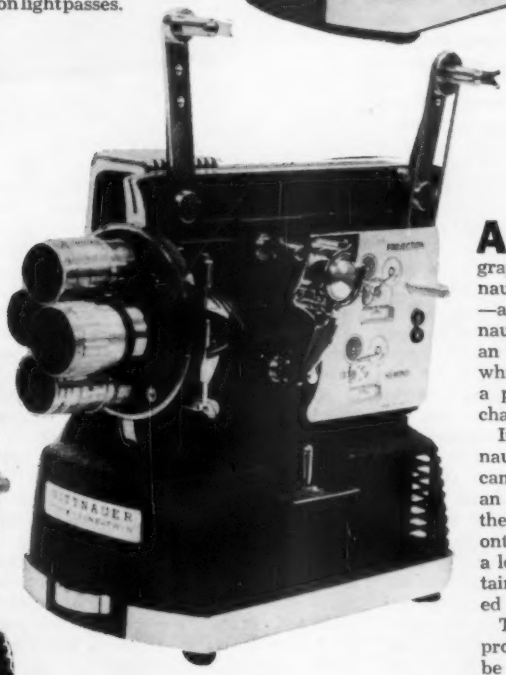
By JOHN DURNIAK

6

Projector takes 300-foot reels, and film slips into slots which are marked clearly on diagram at back.

5

Reel arms are raised. Front real arm automatically opens passage through which projection light passes.



4

Knob (not visible) unites camera with base after few turns. Joining parts are automatically coupled.

A new name in the photographic field—Longines-Wittnauer of watchmaking fame—and a new product, the Wittnauer Ciné-Twin, have smashed an old, traditional concept which states that a camera and a projector are separate mechanical entities.

In just 30 seconds, the Wittnauer 8-mm electrically-driven camera can be converted into an 8-mm projector by placing the camera (minus one cover) onto a base unit and turning a locking screw. Two self-contained reel arms are then lifted into positions.

This revolutionary camera-projector unit must be seen to be fully appreciated, but even then, it seems too good to be true. The price at first glance seems like a typographical error—$159.50. This figure includes the camera, projector adapter base, and two lenses (normal taking lens, and projecting lens).

(*Continued on page* 147)

SCREEN OF A MILLION LENSES

New reflecting material gives brighter image over wider viewing area

By ROBERT L. McINTYRE

At 45 degree viewing angle, image on lenticular half of screen (right) is bright, on beaded half (left) is dim.

The most exciting home movie and slide projection development in recent years is a new, lenticular screen. Its surface, made up of millions of tiny lenses, reflects an image averaging more than twice as bright as conventional materials and maintaining a constant brightness level over a much wider viewing area. Less susceptible to the image-degrading effect of incidental light as well as more brilliant, it permits quality projection in undarkened rooms.

This new screen represents an important break-through at the manufacturing level. Photographic engineers have known for many years that far more efficient screens could be designed, based on the lenticular principle. Costly experimental units have been made in the laboratory to prove it. The difficulty has been in production—the tiny, silvered lenses that make up such a screen surface must be formed accurately and distributed in a regular pattern throughout its entire area.

Universal Screen Company of Clinton, Mass., has licked this problem. A newcomer to the photo field, it brings with it 30 years embossing and laminating experience of Nylco Products, Inc., its parent company, and its own lenticular design. Additional rights in screen manufacture were acquired recently through the purchase of Glometer Corp., formerly one of its reflective material customers. The firm's basic patents are pending. It is readying a line of portable tripod models in standard amateur sizes for the late fall market, plus larger sizes in snap-on, folding frame models.

Glass-beaded and silver screens are the most popular types in use today. How much is brightness increased by the lenticular surface in comparison with them? That depends—literally—on where you are sitting. To a viewer looking over the projector and straight down its axis, the new screen image is slightly brighter than the picture you get with a beaded screen. It is noticeably dimmer than that observed when a flat, directional silver screen is viewed from the same angle. It is from seats at the sides of the projection axis that the biggest gain is noticed.

At a viewing angle of 15° (about the third seat either side of the projector when straight-backed chairs are arranged compactly in an average home projection setup) the lenticular image appears twice as bright as a silver screen and three times as brilliant as a beaded one. At 30° the relative gain is greater. As the viewing angle approaches 45° it is still more pronounced—up to five times from the sides of the room. What happens is that the lenticular surface remains almost constant in brightness over a full 90° viewing area, 45° either side of the projection axis, while conventional screens fall off sharply as the viewing angle increases. These rounded-off figures give a general picture of the results that are obtained. When Universal's testing system has been correlated with standardized measurement procedures in the professional movie field it will be possible to compare statistics on the new screen with studies on a wide variety of reflective materials.

Brightness is not the whole lenticular screen story. There are gains in contrast, too. The screen surface is designed to spread light horizontally over a broad seating area while concentrating it vertically to avoid wasting brightness on floor and ceiling. Light from the projector position gains maximum reflectance. A valuable by-product of this design feature is that extraneous illumination coming from other directions is not as brightly reflected. From a viewpoint in the audience seating area the screen remains relatively dark under incidental lighting. Because of this it retains maximum color contrast and brightness contrast when pictures are thrown upon it. The gain is readily apparent under dimout projection conditions and becomes more striking as room illumination is increased to a normal home lighting level.

The surface that makes this possible is not easy to describe, even while you are looking at it. It is made up of miniature, convex paraboloidal lenses, each one resembling a slice from the side of a hard-boiled egg. They are arranged in parallel rows with their longer dimension on a vertical axis. The spaces between them form concave lenses of somewhat the same curvature. This gives the screen an appearance of fine vertical ribbing.

Screen gives a bright image over a broad angle even in semidarkness.

Universal engineers have computed the size, curvature and orientation of these lens elements to give best possible performance under home projection conditions and in classrooms and other situations where audiences are of moderate size and where seating is restricted more or less to an area in a single plane at right angles to the screen.—▶

NEW FOR MOVIE MAKERS

16-mm Super Anscochrome

By ALLAN GREEN

THE film that made a sensation when introduced in its 35-mm form—Super Anschochrome (Exposure Index 100) — is now available in 16-mm motion-picture size. This film has the fastest color emulsion ever offered to the amateur motion-picture maker.

Following POPULAR PHOTOGRAPHY's rigid motion-picture film-testing policy, Super Anscochrome was put through its paces. Here are the results of this test: (testing equipment included a Bolex H-16 movie camera, and a General Electric Model DW-68 exposure meter. Meter was thoroughly checked with other meters in conjunction with a positive foot-candle light source. Before shooting, each scene was metered, and exposure settings followed carefully.)

Inasmuch as our film was balanced for daylight we had to be careful to keep our color temperature high enough so that final colors would be rendered in as true color as possible. (Color-conversion filters could be used in available-light conditions. However, filters would lower the exposure index drastically.) The first test was made in a supermarket. The existing light was fluorescent mixed with a small amount of daylight. A color-temperature meter showed that the Kelvin reading of this scene was 5500 degrees. Our exposure meter indicated a reading of 1/50 sec at *f*/4.5. With the Bolex film-speed indicator set at 24 fps (1/50-sec shutter speed) we exposed about 30 feet of film. Then, we raised the exposure index on the meter to 400 ASA and continued to shoot at *f*/8. We compared these readings with another based upon ASA 16, which has been the conventional speed of most color films. At this rating an *f*/1.2 lens opening would have been required, as compared to our *f*/4.5 and *f*/8.

The results of this first test showed that Super Anscochrome, when rated at a film speed of 100 ASA, renders completely satisfactory results. The colors of the original scene were faithfully reproduced and the screened footage exhibited a full contrast range which we would normally expect with black-and-white film. The supermarket footage was exposed at ASA 400, and while somewhat underexposed, nevertheless could be considered as useable. At the same time close-ups of the various product displays were made for color comparison and the resultant color was faithfully reproduced.

After the first test we waited for nightfall and went to a local carnival for the next series of tests. Our exposure meter indicated an *f*-stop of *f*/3.5 with the film rated at 100 ASA. Our color-temperature meter indicated a reading of 3400 K.

Under these conditions it would have been wiser to use a color film balanced for tungsten or photoflood illumination, but at this point we were only interested in image quality rather than image color. We shot about 25 feet under these conditions and when the results were screened we were truly amazed. To the best of our knowledge color motion pictures under night conditions had never been attempted before simply because the general lighting level of these scenes is far below conventional color-film requirements. When this footage was exposed, we were concerned with the extreme contrast of the original scene and wondered if enough image detail would be recorded on the film. When this footage was projected we noted that although the scene was somewhat contrasty, both highlight and shadow areas were recorded faithfully. Incidentally the lighting ratio of the carnival scene was approximately 12 to 1, and most rule books tell us that color should never be exposed where the ratio exceeds 4 to 1. We can therefore conclude that not only does Super Anscochrome film possess high speed but also a much greater latitude than any other color film on the market.

Henry Harrison

Fluorescent lights provided Allan Green with adequate illumination when he exposed 16-mm Super Anscochrome.

The remainder of the film was used to expose an interior scene which contained indirect daylight. The shots were made in the later afternoon of an overcast day and our G-E meter told us to shoot at *f*/5.6 (24 frames per second). During this period we varied our ASA exposure index so that exposures were made at 100, 200, 250, and 400 ASA. The color-temperature meter gave us a Kelvin reading of 5900 degrees, thereby assuring us of good color rendition. Upon examination of this projected footage, we can safely conclude that Super Anscochrome film can be exposed at ASA readings as high as 250 without encountering shifts in color quality or extreme underexposure.

The test which we made at 400, while it yielded an image, was considered unsatisfactory because of the fact that the colors became diluted and a certain amount of grain was apparent.—

Bulls cannot distinguish red from any other color and are, in fact, color blind. In bullfighting it is the movement of the cape that excites the bull, not its color. Although bulls can't tell a white cape from a red one, spectators at a bullfight certainly can. The matador doesn't exist who would dare enter the arena without the romantic red cape.

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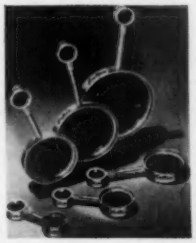

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Know Your Speedlight

(*Continued from page 93*)

speedlight flash duration, the greater the susceptibility to reciprocity failure. The fact, for example, that Kodak's Tri-X and Royal Pan give higher guide numbers than Du Pont S-X Pan and Ilford HPS (which are normally at least as fast) as well as the new Royal-X Pan emulsion (which is inherently faster) can probably be ascribed to reciprocity characteristics of the films involved.

Processing Treatment of Film

Variations in the development of black-and-white and color films will result in significant variations in guide numbers obtained. However, it should be noted that these variations are not as great with electronic flash as they are with available-light exposure-development techniques.

This is particularly true with color materials. For example, with Anscochrome, Super Anscochrome, and Ektachrome E-1 and E-2 films, the amount of additional processing required to yield a one-stop push under normal exposures, will result in guide numbers for electronic flash no more than one half stop higher, and most photographers will prefer the quality obtained from normal guide numbers whether they prefer the increased processing or not. (The author's preference with Anscochrome, for example, involves the use of the same guide numbers obtained from a normally processed test, coupled with one-stop push processing which increases transparency contrast and crispness and gives better blue saturation.)

In black-and-white the two variables are the choice of the developer used, and the degree of development given. In general, the best electronic-flash technique involves using the same developer and developing time you find works best in daylight shooting for the film in question. Many years ago it was axiomatic that electronic-flash negatives be given 50 percent overdevelopment. Ten and fifteen years ago, when speedlights were considerably less efficient than they are today, this may or may not have been advisable. It is not advisable today, although within narrow limits it is possible to obtain higher guide numbers by increasing development up to 50 percent.

Basic Procedure for a Guide-Number Test

1. *Subject and surroundings.* Guide-number tests made in average-size rooms with light-colored walls and ceilings tend to give inflated guide numbers. Tests shot in locations having dark walls and ceilings, with little or no effective reflective areas, tend to give considerably lower guide numbers. For really reliable results it's usually advisable to make several tests under varying subject conditions. Subject matter included in the test shooting should contain a full range of tonal values from clean whites to dead blacks. And, because most of us use most of our

film making pictures of people, it's almost mandatory to include some human victim in the test-exposure series.

2. *Exposure techniques.* The speedlight reflector should be set up at a carefully measured distance from the subject and left in position throughout each series of test exposures, preferably by mounting the flash head on a light stand or tripod, or clamping it firmly to some handy substitute. Three or more exposures should be made at each lens aperture to avoid being influenced by accidental charging errors. (See following section on *Pitfalls in Speedlight Testing.*) To avoid possible confusion in later evaluation of test negatives or transparencies it's a good idea to include a small card showing the *f*-stop used in each picture.

The test exposure series should include a sufficient range of lens apertures so that the properly exposed frames will be surrounded on one side by disastrous overexposures, on the other by pronounced underexposures. If a manufacturer's guide-number recommendation is available, use the aperture determined by this guide number as your middle point and include an equal number of over- and underexposures on either side of it.

Pitfalls in Speedlight Testing

1. *Recycling time.* After a speedlight is flashed, a certain amount of time is required for the capacitor to absorb a new charge from the power supply. This "recycling time" is commonly defined as the time required for the capacitor to reach 80-to-90 percent of its full-power point, experience having shown that a power loss of 10-to-20 percent is hardly ever detectible. In making guide-number tests it is extremely important that we allow sufficient recycling time to obtain a fully charged capacitor for each shot, and some photographers make a practice of waiting two or three times longer than is considered necessary to be absolutely sure of this. Two points should be borne in mind: First, almost all units will fire with the capacitor charged to only a fraction of the rated power point. Second,

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*Pat. Pend.

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the neon "ready-lights" built into electronic-flash units are, for a number of reasons, extremely unreliable, and will in the majority of instances commence signaling much before they should.

2. *Power-supply variations.* Variations in power-supply input voltage can very easily result in false guide-number test results. Such variations are extremely common in expendable dry-battery power supplies of both the high-voltage and low-voltage "D" cell types. Rechargeable lead-acid and especially nickel-cadmium battery power supplies produce extremely constant input voltages, and even with line-voltage fluctuations, a-c power supplies can be relied upon to deliver uniform capacitor charges. Since almost all units having expendable dry-battery power supplies offer optional a-c line current operation, it is advisable to run a second guide-number test on a-c as a check against battery performance.

3. *De-formed capacitors.* When an electronic-flash unit has lain idle for a long time, the capacitors undergo a change called "de-forming" which is a temporary breaking down of the insulating material between the capacitor plates, causing what amounts to hundreds of tiny "short-circuits." The result is that the de-formed capacitor is highly ineffective, and able to store only a fraction of its rated charge. This is, happily enough, only a temporary condition and can be remedied by charging the unit for several hours (in most cases). Incidentally, since this capacitor "forming" can consume a considerable amount of current it's a good idea to do this with a-c line current rather than with expendable battery power supplies. To make sure the capacitors are up to snuff before testing either a brand-new unit, or one that has not been used for a considerable amount of time, part of the test procedure should include leaving the unit plugged into an a-c line for several hours before shooting.

4. *Reflector-to-subject distance.* It is important to note that a flash reflector will not always deliver the same guide numbers at all distances, and particularly not at very close distances where the subject field may receive only part of the light beam projected by the reflector. In general, reflectors that give very wide beam coverage tend to give reduced guide numbers at distances of less than about four feet, while reflectors giving highly concentrated narrow beams tend to fault at larger distances of about 25 or 30 feet. To detect distance variables in speedlight guide-number testing, one authority makes each test at three different distances, 4, 10, and 20 feet, which experience has proved to be fairly representative of average shooting practice.

Basic Procedure for a Reflector Coverage Test

The basic control required for a beam-coverage test is a flat background area such as a large expanse of wall having uniform tonality. This test may be combined as part of the guide-number test, or made separately when more critically accurate results are required. Since reflector-coverage characteristics are, from the practical point of view, related to the angular field coverage of the camera lens, such tests should be made with any wide-angle lenses that the photographer may desire to use with the flash unit.

The object of the test is a print in which the even tone of the background area carries straight across the print, from corner to corner. There are three important shortcomings of reflectors:

1. *Hot-spotting.* This is the tendency of some reflector designs to throw too much light into the center of the picture, and is usually characterized by adequate corner illumination and bleached-out central highlight areas. In some cases hot-spotting may be due to a poorly positioned flashtube and can be remedied with professional servicing, preferably by the speedlight manufacturer.

2. *Vignetting.* This is the failure of the reflector beam to illuminate the subject field covered by the camera lens. It is generally characterized by darkened corners and a rounded or elliptical patch of properly illuminated area in the center of the negative.

3. *Doughnutting.* This is the tendency of some very shallow (wide-beam) reflector designs to throw somewhat less light into the center of the field than outward toward the edges. Doughnutting is usually difficult to detect as it is seldom extreme in its effects, but can result in a darkened hole in the center of the picture.

Reflector beam coverage tests are easier to evaluate when shot on narrow-latitude materials such as thin-emulsion type black-and-white films or a color film, particularly Kodachrome. The results (particularly of doughnutting and vignetting) will be best revealed in *underexposed* negatives or transparencies, and this effect may be heightened in b-&-w by coupling underexposure with overdevelopment to yield maximum contrast.—▶

Moneymaking Ideas

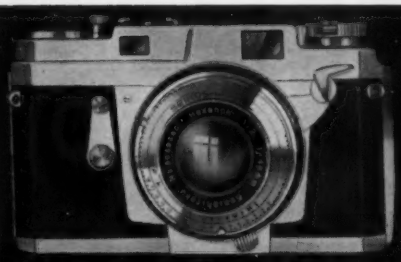
(*Continued from page* 56)

York in his late teens with a sale by mail to one of the large, general-interest magazines. Later, he visited New York and hit the *Life* office with prints showing an original approach to photographing college athletes during an important game. Shortly after, on special leave from the Army, he updated these and *Life* used several pages. Now, less than a year out of service, he has moved to New York and is finding magazine assignments which are developing his very considerable talent. He supplements this with sales of self-imposed "assignments" to other magazines, including (if you want another clue to his identity) one to POPULAR PHOTOGRAPHY.

$ $ $ • $ $ $

These examples are not exceptions to the way professional and semiprofessional careers begin. Individual circumstances, of course, are varied, curious and sometimes astonishing. In future columns we can tell your story and the wisdom you found—the hard way.—▶

POPULAR PHOTOGRAPHY will pay readers $5 for each money-making idea printed in this column—Ed.



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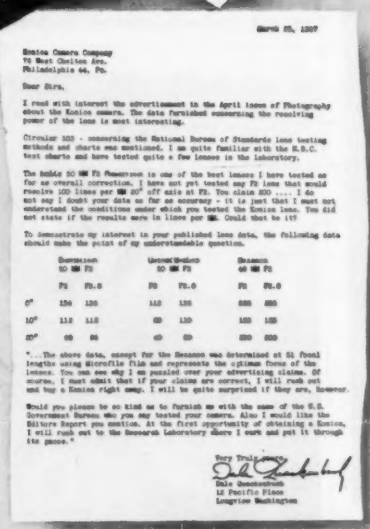
...124.75

He Challenged Our Claim



March 25, 1957

Konica Camera Company
76 West Chelten Ave.
Philadelphia 44, Pa.

Dear Sirs,

I read with interest the advertisement in the April issue of Photography about the Konica camera. The data furnished concerning the resolving power of the lens is most interesting.

Circular 503 - concerning the National Bureau of Standards lens testing methods and charts was mentioned. I am quite familiar with the N.B.S. test charts and have tested quite a few lenses in the laboratory.

The Hexanon 50 mm F2 Photorex is one of the best lenses I have tested as far as overall correction. I have not yet tested any F2 lens that would resolve 100 lines per mm 20° off axis at F2. You claim 200 .... I do not say I doubt your data as far as accuracy - it is just that I want not understand the conditions under which you tested the Konica lens. You did not state if the results were in lines per mm. Could that be it?

To demonstrate my interest in your published lens data, the following data should make the point of my understandable question.

	Hexanon 50 mm F2		Uxenon 50 mm F2		Hexanon 40 mm F2	
	F2	F2.8	F2	F2.8	F2	F2.8
0°	126	126	112	126	225	225
10°	112	112	63	110	125	125
20°	63	63	40	63	200	200

"...The above data, except for the Hexanon was determined at 51 focal lengths using Microfile film and represents the optimum focus of the lenses. You can see why I am puzzled over your advertising claims. Of course, I must admit that if your claims are correct, I will rush out and buy a Konica right away. I will be quite surprised if they are, however.

Would you please be so kind as to furnish me with the name of the U.S. Government Bureau who you say tested your camera. Also I would like the Editors Report you mention. At the first opportunity of obtaining a Konica, I will rush out to the Research Laboratory where I work and put it through its paces."

Very Truly Yours,
Dale Greenbaugh
12 Pacific Place
Longview Washington

". . . The above data, except for the Hexanon was determined at 51 focal lengths using Microfile film and represents the optimum focus of the lenses. You can see why I am puzzled over your advertising claims. Of course, I must admit that if your claims are correct, I will rush out and buy a Konica right away. I will be quite surprised if they are, however.

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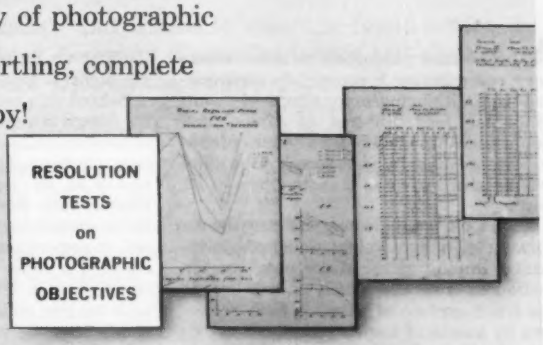
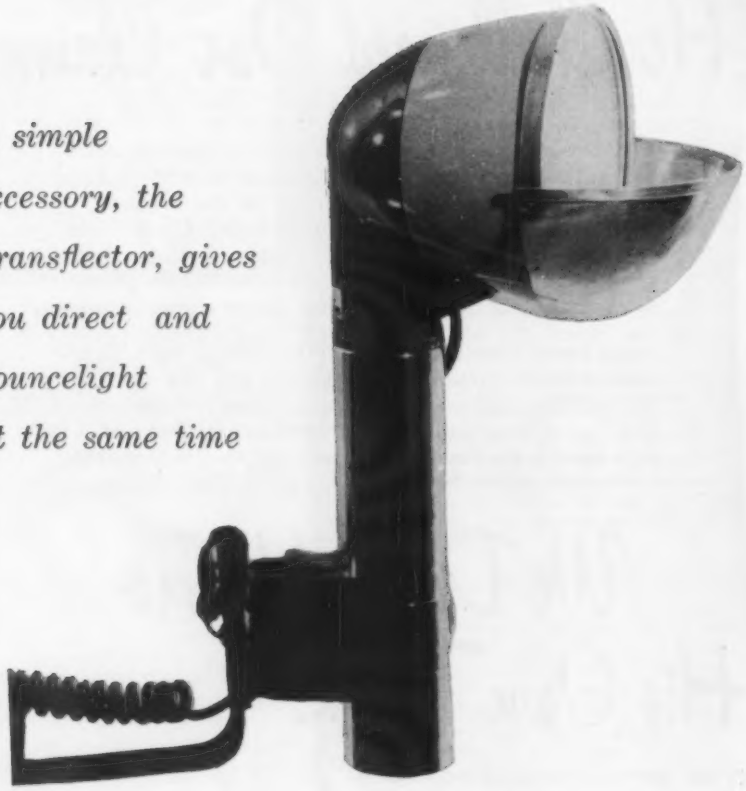


KONICA CAMERA COMPANY, 76 WEST CHELTEN AVE., PHILADELPHIA 44, PA.
IN CANADA: McQueen Sales Co., 1648 W. 4 Ave., Vancouver 9, B. C. IN VENEZUELA: Seijiro Yazawa, Apartado 3179, Caracas
Mfg. by KONISHIROKU PHOTO IND. CO., LTD., TOKYO

Two-way flash

A simple accessory, the Transflector, gives you direct and bouncelight at the same time



Direct flash provides flat lighting on subject and contrasty shadows in background.

Transflector flash softens shadows, gives modeling to subject. Aperture was increased yet was smaller than that required by bounce.

A brand-new photoflash reflector accessory representing a completely new concept in flash photography effectively combines the best features of direct- and bouncelighting techniques, and proves once more that in photography the total can be much greater than the sum of its parts.

Called the *Transflector*, the new device consists of a lightweight polished-aluminum stamping in the shape of a quarter section of a sphere which is attached to the front surface of existing flash reflectors by means of a spring clamp. In position, the Transflector gives the flash unit the improbable appearance of a pelican with its maw at full aperture, and gives to flash pictures a sparklingly natural quality that we do not believe any other single light source can possibly duplicate.

Behind this radical departure in reflector design is a man, and an idea. The man is George Seligson, an "occasional" amateur photographer, and, happily for the rest of us, an engineer and inventor. The idea is, very simply, that most flash pictures should be better than they usually are. In experimenting with flash, Seligson traveled a route that will be familiar to many readers. First, he tried direct flash with the gun mounted on the camera. The result was objectionable because of the flattening effect of straight-from-the-lens lighting, as well as excessively harsh "miner's head-lamp" shadows. Direct flash off-the-camera was somewhat better, providing some modeling but still producing excessively harsh, unnatural shadows. Then he attempted bouncelight.

By aiming his flash at the ceiling, walls and other nearby light-colored surfaces, he spread the light over a wider area and illuminated his subjects more evenly. Contrast was pleasantly softer, shadows more natural looking, the pictures altogether better. But, thought Seligson, not good enough.

Sometimes his bounce pictures were too flat, even muddy, his subjects appearing with murky black patches instead of eyes. The exposure increases required often were greater than he felt practicable, and he found that bouncelight exposures required a lot more accuracy than he was

frequently able to achieve. His technical background notwithstanding, Seligson insisted upon retaining his status as an anti-technical part-time Sunday snapshooter. What he wanted was something that was better, extremely easy to use, and involved only one light source.

From his experiences with direct flash Seligson came to the conclusion that most flashbulbs and speedlights produced a lot more light than was usually needed. He therefore determined to discover a practical way of dividing this light so that some of it would continue as direct frontal illumination, while the rest was used to contribute a bouncelight beam.

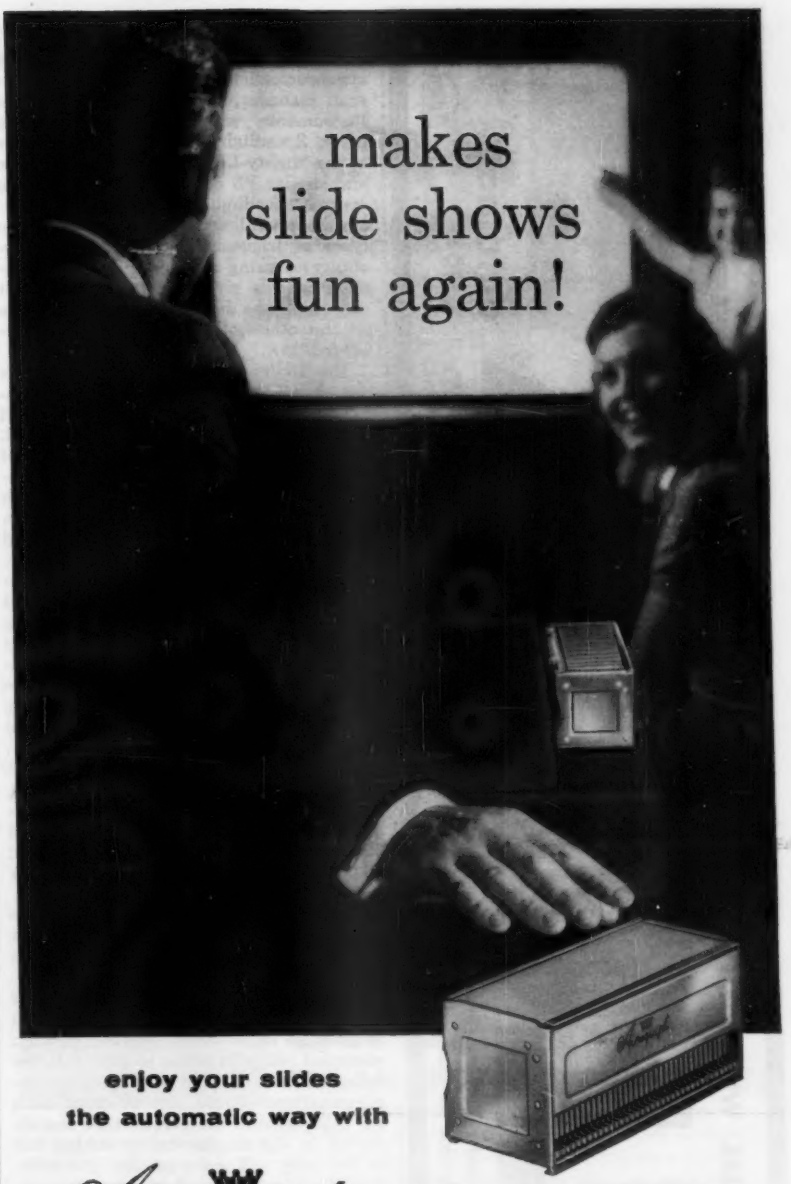
His solution, arrived at after several years of intensive experimentation, is to convert a reflector into two separate reflectors producing two overlapping light beams at right angles to each other. Approximately half the light is permitted to spray straight at the subject as a direct-flash component, the remainder being redirected to form the bouncelight component. The circular spring clamp which holds the *Transflectors* on the flash reflector permits adjustment of the unit in any desired position to produce a straight-up ceiling bounce, a sidelight effect, and any imaginable in-between effect.

If this bouncelight component is to contribute to the picture, the unit must, obviously, be used under conditions where effective bounce areas are present. Best results are generally attained in light-colored rooms with 10- to 12-foot ceilings. Exposures with the Transflector will be greater than those indicated by the normal direct-flash guide number (*because of the light redirected for the bounce*), but a lot less than would otherwise be required for straight bouncing (*because of the direct-flash beam*). Based on our extensive testing of this device it appears that the best all-around rule is to give one full *f*-stop more exposure than your normal direct-flash guide number indicates. Only under very unusually difficult bounce conditions (dark-colored surfaces, extremely high ceilings and/or very large areas) will additional exposure be required.

Pictures flashed with the Transflector are considerably less harshly contrasty than with direct flash, a lot crisper and more sparkling than with straight bounce. Shadows are soft, natural, and open. And, if the Transflector-equipped reflector is positioned close to the lens, completely shadowless pictures will frequently result. The unit may be used either on or off the camera, the decision depending primarily upon what you want the direct-flash component to contribute. Under average indoor shooting conditions, however, on-the-camera operation will usually provide an almost perfect compromise between direct- and bouncelighting approaches.

In addition, the Transflector may be used to produce two separate and simultaneous bounce effects with, for example, the direct-flash part of the beam aimed off to the side at a wall area, the regular bounce beam aimed up toward the ceiling. In such applications, however, the exposure must be estimated in terms of

(*Continued on page* 143)



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KOWA OPTICAL CORP.,
260 FIFTH AVE., N. Y. 1, N. Y.

Speedlight Slave Units

(*Continued from page* 106)

Remote control PE units for high-voltage synchronization units are made by several manufacturers including Hauman Instruments, who make the Hico-Lite units, Speedlight Center, manufacturers of the Mighty-Light units, and FR. These and similar PE cell units can be used to operate speedlight units of other manufacture providing they employ the same types of triggering circuits. The advisability of using a given PE cell attachment with a given electronic-flash unit can usually be determined by writing one or the other of the manufacturers involved.

The Heiland Division of Minneapolis Honeywell have for many years manufactured a universal PE triggering unit called the Heiland Fotoeye, Model HR-53. This unit is capable of operating almost any electronic-flash unit in existence today. (We have tested the HR-53 with more than thirty different U. S. and foreign-made speedlights, and never found one that it wouldn't operate.) This ability to enslave speedlight employing widely different triggering circuits is achieved by means of a simple method of adjustment. When the chrome housing tube is opened from the bottom, spaces are revealed for either two rectangular aluminum slugs (supplied with the unit) or two 22½-volt batteries of the same shape (which may be purchased separately). This affords three different combinations: (1) two aluminum slugs; (2) one slug, one battery; (3) two batteries. Instructions supplied with the Fotoeye explain its operation with various Heiland units; if in doubt about its use with any other unit, write the manufacturer.

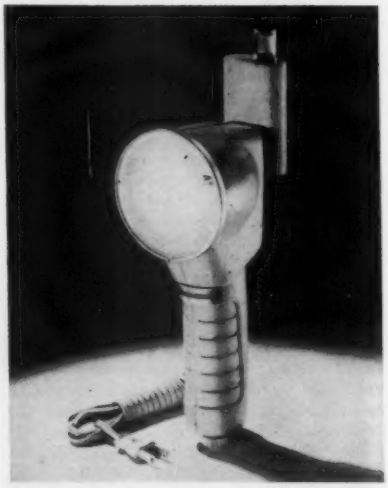
All of the units about which we have spoken up to this point as being suitable for use as slave lights are of the "X" or zero-delay synchronization type which includes perhaps more than 98 percent of all units made today. The very small number of units which operate through electrical relays in order to duplicate the delay of various type of flashbulb synchronizations should not be used with PE cells because the erratic time lag involved in the mechanical switching bar of the relay will make precise synchronization of master and slave extremely problematical.

In setting up slave lights the PE cells (which attach directly to the flash reflector or are connected to a nearby portion of the lightstand by means of some clamping arrangement) should be directed so as to receive the maximum amount of light from the master unit. PE cells are extremely sensitive, and have been effectively used at distances of more than 100 feet. Maximum flexibility is afforded by the use of a connecting wire between the PE cell and the flashhead of the slave light. In photographing interiors, for example, this method is frequently essential when the slave is completely concealed from the main light and the PE cell must, in effect, see around corners. If you use an unshielded PE cell, be sure to aim the concave, or dished-in side of the black receptor plate in the direction of the light. This is the light-sensitive side.

Here are a few slave-light ideas that are extremely popular with users of electrical flash.

For the master light (which triggers the slaves) many photographers prefer to use as small and light-weight a unit as possible. In some cases the flash from this unit actually contributes little or nothing to the total photographic result. One idea that seems to be catching on involves using a speedlight unit from which the reflector has been removed. The result is a nondirectional splash of light which reaches all PE cells (which need not be aimed too critically) and which contributes a certain amount of lighting quality, particularly when the slaves are bounced.

Slave-light operation does not necessarily mean using the different units on light stands or clamping them down to fixed positions. One very popular method of operation used by newspaper and magazine photographers today involves the cooperation of an assistant who trails the photographer with the slave, always keeping the PE cell aimed in the direction of the photographer's master unit, and the reflector directed as a sidelight or bouncelight. At several recent major news events we have seen photographers working in this way under the most harrowing conditions, and getting extremely good results! This perambulating slave lighting can be a lifesaver in shooting candid color.



FR Model 140 converts to slave operation by addition of FR Remote Control Slave unit.

To the best of our knowledge, at the moment only one unit now on the market is designed *primarily* as a slave light. This is the new Heiland Model 60-S, which very well illustrates the major requirements of a straight slave unit: portability and packability. In every other respect the straight slave has the same obligations as any other electronic-flash unit: to provide a dependable source of electronic-flash lighting. For many professionals the straight slave is frequently a great blessing, enabling him to pack more flash into less space. But, for the average photographer, amateur or profes-

sional, an additional speedlight of the standard shoulder-pack type is generally a better investment. If, for example, the photographer combines a small, lightweight unit with a more powerful, and more substantial unit, both of which can be operated by the same PE cell, he has the use of either unit individually, or as a slave, affording four-way flash versatility.

An incidental aspect of this slave-light operation has to do with the negligible resale value of an electronic-flash unit when it comes to trying to trade it against a new model. Instead of taking a financial loss on a unit which is obsolete only in the sense that newer units offer lighter powerpacks and certain other desirable features, many photographers will extend the life of their original investment with a relatively small outlay for a PE cell attachment.

When in use PE cells should be hidden; when not in use they should be completely covered up. The reason for this is that the light-sensitive receptor plate can very easily be desensitized by long periods of exposure to strong light. The original sensitivity can usually be restored by putting the cell away in a dark place for a length of time. To avoid this annoyance, use the metal shield supplied with most PE cells, or make a substitute yourself, in order to expose the minimum PE cell area necessary, as well as to limit the direction of incoming light from extraneous sources. When not in use, a small leather bag will serve to preserve its sensitivity as well as to guard against jarring.

The big problem with PE cell operation occurs when slave lights are set up in a place where several photographers are working with flash or speedlight. Unfortunately, though you may have bought and paid for it, your phototube will respond to anyone else's light as readily as to yours. There's a wonderfully ironic story about the well-known speedlight photographer, Gjon Mili, having all of his carefully arranged slaves triggered by an amateur who popped up with a flash-equipped box camera a moment before Mili was ready to shoot the finish of an important indoor track meet. And, if Mili hasn't been able to solve the problem, this writer may well be excused for merely citing the difficulty and wishing you luck!—

Mamiya Magazine-35

(*Continued from page* 111)

rigid requirements. Chief among these is the fitting accuracy which affects not only the critical lens-to-film distance, but the absolutely essential parallelism of lens and film plane. To complicate matters considerably, however, the method of attaching and removing these magazines must be extremely simple and fumble-proof.

It is very difficult to see how this could be improved upon in the Mamiya. With a magazine attached, the camera body is as solidly free of play as any other die-cast camera we've ever seen. As a matter of fact, anyone picking up the Mamiya Magazine-35 for the first time would probably never know it has a double-unit

Taken the modern way with Pressmaster lamphead. Note even illumination.

Taken the old fashioned way with ordinary reflector. Note "hot spot", dark corners.

Heiland Strobonars

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Only the Pressmaster* lamp head, exclusive on Strobonar* electronic flash units, combines modern miniature design with even, corner-to-corner light distribution. Heiland Strobonars give you sparkling, clear pictures with no "hot spot" or dark corners.

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Strobonar 62-A for accessory clip mounting *(above)*; **61-A** for bracket mounting *(at right)*. Either **$59.95**

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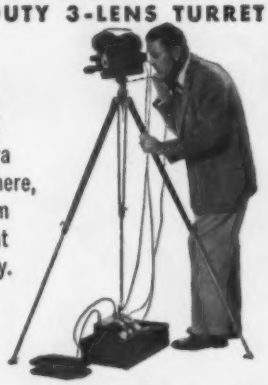

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construction unless he pressed the spring-loaded button and turned the knurled "Lock-Unlock" wheel at the bottom of the magazine section. The instant this latch clicks into the Unlock position the camera is in two pieces: the lens-and-shutter unit and the magazine back.

The accuracy of the system is insured, first, by the precision locking posts at the base of the lens-shutter unit which slip into two small holes in the magazine, second, by the precision-ground three-sided abutment on the face of the magazine, which butts against a critically spaced face plate just behind the lens mount, and, third, by a knife-like surface on the open side of the magazine which slides into a precisely oriented slot on the lens unit.

But, despite all of these precision fitting devices, we found the locking and unlocking system so simple to operate that after a few practice tries we were able to switch backs in a fraction less than thirty seconds. And, although we tried very hard, we found only one possible source of at most only a few seconds delay. This involves the mechanical coupling between the film-advance lever mechanism on the lens-and-shutter unit and the corresponding connection on the interchangeable magazine, which must lie parallel to the back of the camera, as indicated by a match-the-dots system.

CHECK-LIST OF MAMIYA MAGAZINE-35 FEATURES

(1) Interchangeable Film Magazines incorporate frame-counter with automatic start-of-roll setting, film advance signal indicator, and quick-detach lock with automatic internal darkslide to eliminate film wastage.

(2) Large, Bright, Single-Window Rangefinder-Viewfinder with contrasty coupled rangefinder spot, readily visible etched-line frame.

(3) Sharp 50-mm Mamiya-Sekor f/2.8 Lens in fast-focusing parallel-action helical mount with 90 degree sweep-lever throw for infinity to 3½ ft. focusing.

(4) Seikosha MXL Shutter nine speeds from 1/500 to 1 sec., and bulb, full MFX flash synchronization and exposure value number scale.

(5) Single-Stroke Lever for rapid film advance and shutter re-setting will not return until stroke is completed, has red-window ready indicator.

(6) Price: Mamiya Magazine-35 with one film magazine, $89.50; Additional film magazines $27.50.

Without going into microscopic detail, here are some of the other things we especially liked about the Mamiya Magazine-35, and a few that we didn't like.

Likes: The 50-mm f/2.8 is an extremely sharp, contrasty lens, and both the rangefinder and viewfinder must be counted as very good. The rapid-advance lever incorporates a ratchet which prevents its return until the stroke has been completed. This is an advantage because with so many others (including levers on

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some of the costliest of today's upper-echelon interchangeable-lens cameras) the lever will return without having fully reset the shutter and the result is that just as you're ready to squeeze off an exposure you discover that the release button is jammed, and you have to go back and complete the stroke before you can make your shot—which you've usually lost by then! The magazine backs incorporate an internal dark-slide which is coupled to the locking mechanism so that when the magazine is removed from the camera there's no wasted film. Being coupled to the lock, this is a fully automatic feature that can't be forgotten, the way it frequently is (or was) on similar magazines supplied for 2¼x2¼ and larger cameras. The magazine backs are hinged and open completely to facilitate ease of loading as well as making general housecleaning very easy. And, the fixed take-up spool, automatically self-starting frame counter, and flicker-type film-advance indicator window rate additional applause.

Dislikes: We were slightly disappointed to find that rewinding and reloading could be accomplished only with the magazine detached from the lens-and-shutter unit, and would have preferred a through-the-top coupling system similar to that provided for the film-advance system. For the first time with any camera we really wanted a film-type indicator, but the one provided on the magazines registers only ASA film-speed indexes. The magazine provided on our test camera had a black locking wheel, the accessory back a red one. The idea is, one supposes, to distinguish between b-&-w and color, but what happens, for example if you want to load one magazine with daylight color, the other with tungsten? A minor point, of course, but nevertheless, a point. Although we've already indicated our liking for the nonreturn feature on the winding lever, we didn't like the fact that upon completion of the stroke the lever rests flat against the back of the camera body. In trying to shoot rapidly we found ourselves constantly troubled by having to dig our thumb in between the lever and the body. A much better idea, in our opinion at any rate, involves an operating position at least a quarter of an inch or so away from the body.

These few dislikes did not, however, detract from our over-all opinion of the Mamiya Magazine-35 as a highly dependable miniature which combines optical and mechanical excellence with the very valuable ability to switch from one film to another with the greatest of ease. With an extra magazine back the Mamiya is two cameras in one, and there's no limit to the number of additional magazines they'll sell you!—*Bob Schwalberg*

Answers to Popular Photography Quiz on page 44

1—D **3—B**
2—A **4—C**

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'Most Photogenic Girl' seen by TV millions

Photos by Benn Mitchell, Gene Gaines, Byron Dobell

Surrounded by publicity stills, Venetia poses for wire-service shot in her hotel.

Venetia Stevenson, the girl whose picture you saw on the first 35-mm transparency ever to be bound in a magazine (page 76 October POPULAR PHOTOGRAPHY), flew into New York to be on the Ed Sullivan show of August 4. Her four-day stay in the big city was filled with the kind of events that only a starlet can live through: radio and TV interviews, rehearsals, portrait sessions, magazine coverage, business luncheons. Miss Stevenson maintained an enviable calm despite the demands on her. Her perfect poise created the effect of an imperturbable young lady, ready to meet the world on her own terms.—

Editor Downes (left) and Publisher Ziff greet Venetia on her arrival in New York.

Dan Dailey presents "Most Photogenic Girl in the World" on Ed Sullivan show.

TV cameramen enjoyed working with Venetia's fine features during rehearsals.

Interviewed by John Tillman of WPIX.

A "Luncheon at Sardi's" radio interview.

Portrait session at NY News Studio.

Visiting POP PHOTO's editorial offices.

In the lobby of Sardi's restaurant, Venetia's beauty stands out in the crowd.

Giant Flash Problem

(*Continued from page 82*)

of "Big Shot" color flash spectaculars.

After the preliminary arrangements had been made between Sylvania and Stock Exchange officials, Martinson telephoned the Burns studio to ask if the brothers would tackle the job with him. George Burns said yes, starting an exchange of notes and phone calls that culminated weeks later in a list of shooting ideas, a tentative shooting date, and a luncheon date in New York.

The luncheon, on a Friday about one month before the shooting date, was something of a reunion. George, Jim, and John Burns; Dick Martinson; and Sylvania's public-relations representative Tom McCarthy had all worked together on several "Big Shot" assignments.

After lunch the five took a taxi downtown to Wall Street and the New York Stock Exchange. Bob Gurvitz of the Exchange conducted a short tour of the building and filled them in on its colorful history. But their main interest was the trading floor—focal point of American finance, where approximately $125,000,000 in securities change hands daily.

Dick's responsibility was lighting the floor, an area almost the size of a football field and five stories high. His problem was how much light, where to put it, and how to get it there.

The Burns' problem was a classic one —photographing an almost square room from inside the room. Their cameras would have to be placed to take in as much of the trading floor as possible.

The four men settled on two ways each of their jobs could be accomplished: The cameras could be set up on a temporary platform in the very corner of the Exchange on a balcony, or they could be aimed straight down from the ceiling. (This wasn't as difficult as it sounds, because catwalks gave access to the removable lighting fixtures.) Either way, wide-angle lenses would be needed.

Dick's lighting, they decided, could use the same idea, by removing every other one of these ceiling fixures and replacing them with flashbulbs in reflectors. Or a rope harness carrying wiring, reflectors, and flashbulbs could be suspended from the ceiling.

With these problems to puzzle over, they decided to think about it over the weekend.

Monday morning George Burns mailed a thick envelope to Dick. If it was all right with Sylvania, they preferred shooting from the balcony. Long experience with large industrial assignments told them the oblique angle would show more of the traders' activity than a straight-down view. They included a detailed shooting plan based on this camera position, and a copy of the equipment check list they had prepared for the job. The Burns brothers had found such careful advance planning on paper an absolute necessity on large jobs.

At the same time Martinson in New York pulled out his technical data sheets on the Sylvania No. 3 flashbulb (the largest made), his slide rule, and a floor plan

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Joseph Costa, Chief Photographer, King Features Syndicate, Sunday Mirror Magazine

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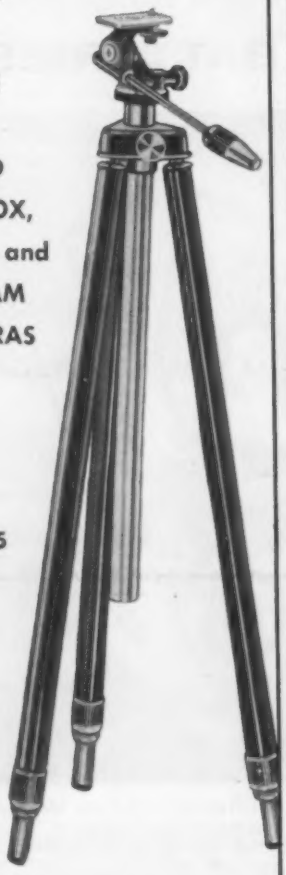

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of the Stock Exchange. It was immediately apparent that replacing every other lighting reflector with a flash reflector would not give enough light; the harness would have to be used.

After a second visit to the Exchange, Martinson ordered the lighting equipment he would need: 75 large 12-inch aluminum reflectors and sockets, three cases of No. 3 flashbulbs, and 2,000 feet of 18-gauge wire. He also dug out his special synchronizing relay outfit and checked it out with new batteries.

During the next two weeks Martinson drew up his final lighting plan, and met with Ralph Burt, chief electrician of the Exchange, who was to be responsible for setting up the lighting to Dick's specifications. On the final plan it looked like 75 reflectors might not be enough, so an additional ten were ordered.

The shot was scheduled for a Tuesday. When the trading floor closed for the weekend at 3:30 the previous Friday, Burt and a 12-man crew from the Exchange were on hand to begin the complex job of making the rope harness and wiring the reflectors. Dick started the men on their 15-hour job then left, returning Saturday for a brief check on their progress.

Once Dick was sure exactly where the lights would be located, he calculated the exposure for the Burns brothers. His thinking ran like this: For a No. 3 flashbulb in a 12-inch reflector, with Ektachrome Type B color film and 81C correction filter, the guide number at a shutter speed of 1/25 second is 180. The lighting harness was 70 feet above the Exchange floor, so this distance divided into the guide number would be the *f*-stop for one flashbulb. The answer is approximately *f*/2.5. He had estimated that the polished light-marble walls would pick up nearly one stop of light. This would change the diaphragm opening to *f*/3.5. Dick knew that eight bulbs were lighting each part of the floor. Eight times as much light would mean closing down three stops, to about *f*/10. The Burns brothers planned to "push" their Ektachrome one stop, so the final *f*-stop Dick estimated to be about *f*/14.

Monday morning the Burns brothers drove down from Schenectady, packing six cameras, tripods, and hundreds of pounds of accessories and spares.

This was to be the big day for all concerned. Plans called for a full-scale test shot to be made. The giant harness (1,000 feet of stage rope had gone into making it) had to be assembled on the floor, the flashbulbs inserted, each leg of the circuit tested to make sure it would fire, then hauled up to the ceiling. The three brothers had to set up the array of cameras—ranging from 8x10 to 35-mm—on the 30-foot platform specially erected on the balcony.

As the Exchange closed for the day at 3:30, 24 men began work. By 9:30 the harness was up, the cameras in place.

Dick checked out his synchronization setup, and double-checked the Exchange electricians on the flashbulb circuits. Everything was working perfectly.

George began a count-down "...5..4..3..2..1.." and pressed the switch to fire the bulbs and cameras in synchronization. The camera shutters clicked, but nothing else happened.

This was a major crisis. Lowering the harness to find the wiring fault, plus rebulbing after the test would take all night, and any more delays would mean postponement of the final shot the next day.

Several hours frantic checking on the balcony turned up an error in wiring. Finally, at 11:30 p.m. the test was made.

The Burnses rushed with the film to Kafka Color Laboratory, where they had arranged for immediate processing. After viewing the wet transparencies they stumbled to their hotel and bed, relieved that their exposures were good.

The culmination of all this preparation by so many people—the actual shot the next day—was an anticlimax. George, Jim, and John arrived at the Exchange soon after 1 p.m. to reload and check out the cameras. They looked at the test transparencies again, deciding to shoot at *f*/11 with an 81EF filter.

Martinson, who had stayed for the rebulbing operation the night before, wandered into the Exchange about 2:30, and in a few minutes had checked out the flash and synchronization circuits again.

The four experts waited until just before closing when activity was at its peak, and at 3:11 p.m. George Burns closed the switch. The first color flash shot of the New York Stock Exchange went off without a hitch.

HOW TO PLAN YOUR OWN FLASH SPECTACULAR

- Preplanning is the key to success. Leave as little as possible to chance.

- Make a rough freehand diagram of the area indicating significant subject dimensions and camera position.

- Using the area diagram as a guide, work out a shooting plan showing the positioning and distance for each flashbulb. Remember that light falls off with the square of the distance so that, for example, a lamp 12 feet away from the subject will contribute only one fourth as much light as a lamp placed six feet distant. In this case, if you want your 12-foot light to match the six-foot light you'll have to use four times as many bulbs from the greater distance.

- Make a checklist of all the equipment you'll need, and check off each item as it's packed. (Tip: Carry as much extra equipment, particularly cords, clamps and reflectors, as you can.)

Exposure

- Before attempting to estimate the exposure required for a large number of flashbulbs be certain that you know the correct guide number for a single lamp. If in doubt, make a careful test under similar circumstances.

- Remember that in large dark areas guide numbers will tend to be smaller than under normal shooting conditions.

- If a number of bulbs are used to light

an area directly, the total effective light output will be equal to the output of a single lamp times the number of lamps used. This table may prove helpful:

Number of Lamps	Exposure Decrease (in stops)
2	–1
3	–1½
4	–2
5	–2¼
6	–2½
7	–2¾
8	–3

• Many photographers prefer to work out a new flash guide number when using a large number of bulbs. Here's how this is done: Take the guide number for a single lamp and multiply this by the square root of the number of lamps used. For example, if the guide number for a single bulb is 80 and we're using four lamps, take the square root of four (the number which when multiplied by itself gives four), which is 2, and multiply the original guide number by this factor to get a new guide number of 160.

• All of the above presupposes first, that all lamps are identical; second, that they're all being used in the same type of reflector; and third, that the light from each bulb is aimed directly toward the subject. Lamps used in larger or smaller reflectors, or for other than direct lighting (such as a bouncelight) cannot figure in guide-number calculations. Since there are a lot of variables involved here, your best bet is to make a practical exposure test.

Wiring

• Modern wire-filled flashbulbs may safely and effectively be flashed from 110-volt house current providing that certain wiring procedures and general precautions are adhered to. The appropriate safe firing scheme will depend upon the nature of the lamp used, and the number of lamps to be flashed in one circuit. *Unless you're 100% sure you know what you're doing, consult the technical service department of the lamp manufacturer.* Don't let your spectacular turn into a spectacular suicide.

• Flashbulbs can be wired in either of two basically dissimilar methods, *series* or *parallel* wiring. When lamps are wired in series they are arranged in a straight line (electrically) so that all of the current flows through all of the bulbs. When lamps are wired in parallel they are arranged so that they all draw current independently from a single power source. The biggest advantage to the photographer of series wiring is that if there's a single defective bulb, or loose connection anywhere in the circuit, none of the lamps will fire, and you've wasted nothing. The advantage of parallel wiring is that each lamp receives full flashing voltage, which is of great importance when flashing from a battery power source. Because of the high current consumption in a parallel circuit, never use it when working from 110-volt house current. For more information about electrical matters, see *Electricity for Photographers*, POPULAR PHOTOGRAPHY, *Dec., 1955.*—

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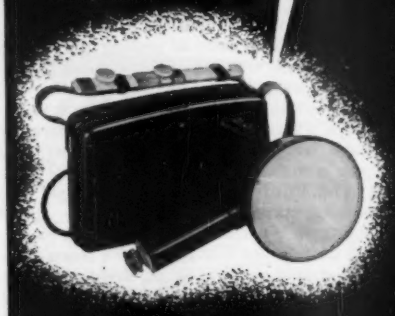

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Polaroid Test Prints

(*Continued from page 87*)

making sure such problems don't ruin their efforts: taking *test exposures*, processing them and returning the next day to shoot (perhaps to shoot another test if the first was not successful), and *bracketing*. Bracketing involves shooting a series of exposures all around the cameraman's best estimate. Bracketing for exposure would be, perhaps, shooting a series of shots ranging from *f*/8 to *f*/16.

Jerry's first problem was to determine the amount of photoflood illumination on the gypsy dancer needed to balance with the violinist's speedlight exposure. Bracketing—let's say three exposures varying just the intensity of the background lights—would solve this.

The dancer's movements were a second problem. Jerry could have bracketed here also, experimenting with several motions to be sure of getting the degree of blur he wanted. (He wanted to use the slowest shutter speed on his Graflex, 1/5 second.) But shoot four dance variations with three bracketing exposures of each (remember the first problem), and you come up with twelve pieces of film.

The third problem—a very basic one—was exposure. Using several speed lights as Yulsman did to light the violinist, finding the *f*-stop involves more than the simple arithmetic of dividing guide number by distance. Bracketing would put you on safe ground here also. Three exposures—an over, under, and normal—of each of the twelve shots we have planned will take 36 pieces of film. Thirty-six exposures for the first picture? Bracketing wasn't the answer.

Polaroid was the easy way out. A Polaroid Land camera in just one minute would produce a good black-and-white print, an excellent indication of everything in the scene except the color. (See Polaroid prints on page 87.) With his first Polaroid shots Jerry found that best lighting and exposure, then he experimented with the girl's path across the background. The resulting black-and-white prints gave him a pretty good idea of what to expect in his color transparencies.

He then could concentrate on the all-important creative aspects of the picture; the mood, feeling, and movement that would spell "music" to potential album buyers.

Although Yulsman's problem was an unusually complex one, the Polaroid print test methods can be used by anyone where the picture is especially complicated, or especially important and cannot be shot again. Amateurs who have Polaroid cameras will find making test prints very helpful when they encounter new technical problems.

Of Polaroid's three print films, Type 41 is the best for tests. The shorter exposure latitude and higher contrast is more suitable for showing up exposure differences, and its exposure index (100 daylight, 70 tungsten) is closest to color films. Type 41 is orthochromatic, or "blind" to red, so expect subject areas with much red in them to photograph

How To Make Polaroid Test Prints For Color

First, find exposure: Make picture-in-a-minute prints until you "zero-in" on best exposure, evaluating each print as you remove it from the camera to decide how much to correct for the next one. To be safe, pick best exposure from a series of prints progressing from under- to overexposure.

Use the best print to find faults in lighting, composition, etc., making additional prints until these have been corrected.

Polaroid film is faster than most color films, so you will have to give the color more exposure. This table lists color films and number of stops the Polaroid exposure must be increased for each film. Example: Ektachrome Type B requires 3⅔ stops more exposure than Type 41 Polaroid film. If best Polaroid exposure was found to be 1/50 sec at *f*/22, the equivalent Ektachrome exposure would be 1/50 sec at about *f*/6.

Approximate exposure difference between Type 41 Polaroid Land film and popular color films.

DAYLIGHT, ELECTRONIC FLASH ILLUMINATION

Color film	Increase exposure by:
Anscochrome Daylight	1⅔ stops
Super Anscochrome Daylight	use same exposure
Ektachrome Daylight (35-mm. roll film)	1⅔ stops
Ektachrome Daylight (sheet film)	3 stops
Kodachrome Daylight	3⅓ stops
Kodacolor	1⅔ stops

TUNGSTEN, CLEAR FLASH ILLUMINATION

Color film	Increase exposure by:
Anscochrome Type B	2 stops
Anscochrome Type F	2 stops
Ektacolor Type B	3⅔ stops
Ektacolor Type S	2⅓ stops
Ektachrome Type B	3⅓ stops
Ektachrome Type F	2⅓ stops
Kodachrome Type A	2⅔ stops
Kodachrome Type F	2⅔ stops
Kodacolor	2⅓ stops

These values should be considered only as approximations. It is important to make tests with your own equipment to find the exact exposure factors best for you.

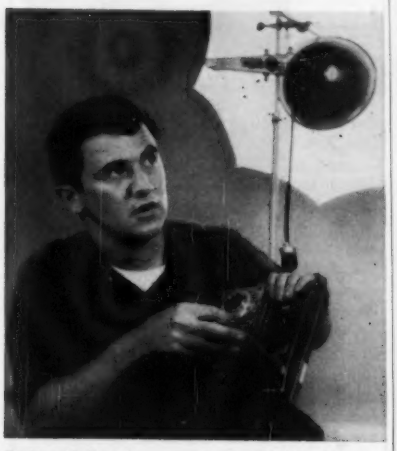
Add one stop to these values when using Type 42 Polaroid Land film; add two stops for Type 44.

Note: Any factors which change exposure index of color film (such as color-correction filters, and exposure correction for individual emulsions) must also be taken into account when figuring difference between Polaroid Land and color-film exposure.—

darker than they would on panchromatic materials.

The other Polaroid films, 200-speed Type 42 and 400-speed Type 44, both panchromatic, can also be used for testing. However, the developing time must be more exact with these for consistent results, and exposure differences do not show up as well as one the Type 41. (Besides, the 41 is cheapest.)

The Pathfinder, Polaroid's highest priced camera, is the most convenient for making tests because of its conventional lens and shutter. With less-expensive Polaroid models, the single exposure control makes it necessary to refer to the instruction book for the actual shutter speed and *f*-stop at each setting. The Polaroid back made by Graflex can also be used, having the advantage, when shooting 4x5 color film, of using the same lens and camera for both the test and color exposures.



Polaroid Land camera helps Al Wertheimer decide on best exposure and lighting balance.

The important advantage of Polaroid testing is being able to *see* your exposure, lighting, and other variables at the time of shooting, rather than depending on an abstract meter reading.

It is especially useful where the difficulty is *visualizing* the final result, such as multiple exposures on one film, shooting through thin fabrics, or arranging electronic-flash lighting.

Photographers can show Polaroid prints to clients and art directors *before* they make their color or black-and-white exposures to give them an excellent idea of how the finished shot will look. Models can benefit from self appraisal during shooting sessions. And many photographers give their nonprofessional subjects Polaroid prints to assure their cooperation while shooting and good will when he returns to shoot again.

Polaroid can help in testing equipment, too. When comparing electronic-flash units in a camera store, for example, you could shoot the same setup with each unit to find the most powerful.

In short, when technician problems become important to the picture, Polaroid test prints allow the photographer to conquer these problems, then dismiss them, freeing himself for the picture.—*Al Wertheimer*

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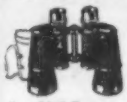

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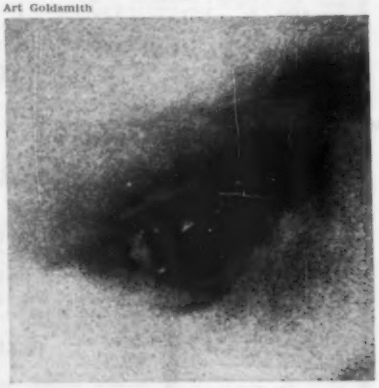
Kodak Royal-X was exposed at ASA 2,400, developed 12 min in DK-60a; five-times blow-up.

Art Goldsmith



Fifteen-times blow-up shows coarse grain, explains Kodak's warnings on enlargements.

The sudden, unexpected and unheralded release of Kodak's incredibly fast Royal-X Pan emulsion in the 120/620 roll-film format was a happy midsummer's surprise for available-light-minded users of these films in 2¼x2¼, 2¼x3¼, and similarly sized cameras whose lenses are generally restricted to a maximum aperture of f/2.8, and are usually slower. Previous to this event Royal-X was available only in large sheet-film formats.

Royal-X roll film carries the same manufacturer's dual-speed ratings as the sheet film: an official clocking by rigid ASA bylaws pertaining to safety factors at a modest 650, plus the published proviso that an index of 1,600 may be used *"Because this margin of safety is unnecessary . . ."* As with the original 4x5 sheet-film version, Royal-X roll film can actually deliver quite a lot more speed and, to quote the news release again, *"When development is forced, ratings as high as 8,000 have produced easily print-*

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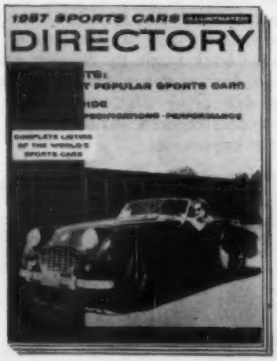

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able negatives." Both sheet and roll-film versions of Royal-X give their best performances in the same oldline Kodak large-format tank developer, DK-60a, which apparently understands this rather amazing material's special peculiarities as does no other formula that this department has been able to locate.

Our experience with Royal-X roll film (previously supplied for professional trade-testing as SO 1196) is summed up in the following brief chart. Effective exposure indexes in the first column are for use with ASA-calibrated exposure meters. The developing times are for DK-60a at 70 F, with about 10 seconds agitation per minute.

Speed Indexes	*Time in DK-60a*
1,600 to 2,400	6 to 10 min
3,200 to 4,800	10 to 14 min
6,400 to 8,000	14 to 17 min

For more complete details see *World's Fastest Film*, POPULAR PHOTOGRAPHY, June 1957. Slightly shorter developing times in the above table, as compared to our 4x5 data, does not indicate that Royal-X roll film is faster than Royal-X sheets, but reflects our view that small-format negatives should be somewhat thinner and less contrasty than large-format negatives. In handling either version of this film be especially careful to give proper agitation and avoid the danger of staining by using fresh solutions from developer to hypo.

Kodak intends Royal-X roll film as a special material for professionals, photojournalists, industrial photographers, "*. . . and in special situations where it will provide new opportunities for the advanced photographer.*" Because of its tremendous speed it is "*. . . not recommended for general use or in simple nonadjustable cameras.*" An extremely grainy material, Royal-X rolls or sheets should be restricted to poorly lighted situations which really need its speed, and enlargements should preferably be held down to a maximum of about five diameters (linear).

Price for a roll of Royal-X 120/620 film is 75 cents.—

Two-Way Flash

(*Continued from page* 131)

individual experience, just as in ordinary bouncelight work with normal reflectors. Our several tests with this technique indicated an exposure of about ½ to 1 complete stop more than required for the more significant of the two bounces without the Transflector.

At press time only one Transflector was available, this to fit the four-inch *Pressmaster* reflector which is currently standard on six Heiland electronic-flash units (Models 61-A, 62-A, 63-A or "Seven," 63-B, 71-A, and 91-A). This unit lists for $2.95. Transflectors designed to fit other photoflash and speedlight reflectors will be brought out as soon as possible. For further information write the Directional Light Corporation, 1947 Broadway, New York 23, N. Y.—

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Miranda accepts the lenses and accessories of the following cameras: Exakta, Exa, Pentacon, Praktica, Consol, Hexacon. For close-up: Leica, Canon, Nikon, Contax.

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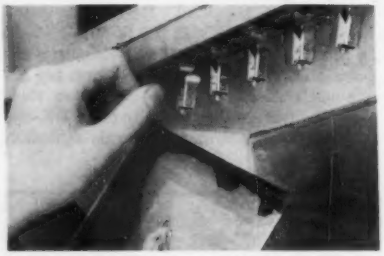
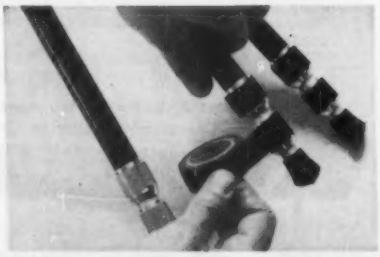
PHOTO TIPS—
SHORT CUTS TO BETTER PICTURES

Firm Grip for Film-Clips



The film-clips sold by photographic supply houses for dental X-ray film can be used to advantage in any darkroom for hanging film to dry. These clips have a positive non-slip grip due to the fact that they puncture the negative but cannot mar it because of a construction provision which permits them to grip only the extreme edge of the film. They operate by means of a two-finger lever action and are easily installed for any desired spacing.—*E. M. Hanson, Los Angeles, Calif.*

When Tripod Leg Sticks

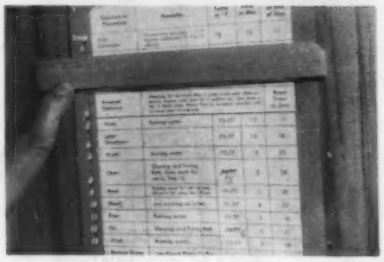


If a tripod leg sticks and refuses to loosen when you're trying to unscrew it, a few lengths of friction tape used as shown in the accompanying illustration usually will help solve the problem. Two or three turns of this textured tape should be wrapped closely around each collar, providing a skid-free surface that your fingers can grasp firmly for turning. Use of pliers or wrenches in an attempt to loosen collars may damage the screw-threads.—*P. Olwyler, Gto., Mexico.*

For the Outdoor Photographer

The camera enthusiast who does a lot of hiking in the course of his photographic activities will find that a U.S. Army belt and a few Army bags will provide an easy means of carrying camera, film, filters and other small accessories on these trips, leaving hands free while keeping equipment within easy reach. The canvas bags can be attached to the belt. These items are available at most U. S. Army surplus stores.—*R. & M. Schulze, St. Louis, Mo.*

Place-Marker for Color Processing



The place-marker illustrated here, for use when processing Ektachrome, was made from a strip of wood 1 inch wide, with a hole drilled crosswise at one end through which was passed a length of coathanger wire which then was bent slightly outward, as shown, and ends looped around wall screws. The crosswise hole was sized so that marker could be moved over each step as completed, but would not slide by itself.—*L. Hochman, Sherman Oaks, Calif.*

Durable Labeling Fluid

A liquid porcelain paint, of the kind used to repair chipped enamel, is excellent for identifying bottles of chemical solutions. It's especially useful for marking bottles that often must be immersed in water for long periods of time to control temperature—such as those used for color-processing chemicals—because this paint does not come off even after repeated soakings. Lettering bottle caps, also, helps identify them when they're immersed.—*F. P. Gorst, Detroit, Mich.*

The New Nikon SP (*Continued from page* 110)

the front right-hand side of the camera body. The frame counter is automatically self-starting, immediately jumps to two-frames-before-zero when the camera back is removed so that when the new cassette is loaded and the three standard safety blanks are fired off, the counter is ready to go at the number one position. A small window opposite the frame counter provides a manually-set reminder of whether the camera was loaded with a 20- or a 36-exposure film magazine. All SP camera dials (save the built-in 50-mm depth-of-field scale) have jet-black backgrounds with large numbers in white, or various colors, which greatly improve legibility.

In addition to these features, the following are holdovers from the Nikon S2:

1: Single-stroke rapid-film-advance lever.
2: Folding rapid-rewind crank.
3: Front-of-camera wheel-focusing for 50-mm and shorter-focal-length lenses.

FEINGERSH: Maybe it is, for you.

SHORR: If you're talking about stuffy stilted composition you're possibly right. I think the 35-mm frame is a terrific built-in sportsfinder, and think, Jack, it's there when you want to use it.

FRIED: I'm not so happy about the gaps in the 85-, 105-, and 135-mm frames—why not more frame and less gaps.

SHORR: The 50-mm field looks like a neon sign on Broadway, one of the best 50-mm finders I've ever used.

FRIED: I think the SP viewfinder is very good, and the rangefinder is very bright. It was easy to follow-focus when I shot action with the motor.

FEINGERSH: I wish the rangefinder were a little brighter.

FRIED: I like the camera I use better.

SHORR: The difference is negligible. The Leica rangefinder is slightly bluish, the Nikon's sort of a yellowish-green.

FEINGERSH: The M-3 rangefinder is more pleasant . . .

Panel of professional photojournalists who tested and reported on the Nikon SP and its accessory rapid-sequence motor include, left to right, Ed Feingersh, Larry Fried, and Ray Shorr.

4: Identical bayonet-type lens mount; all Nikon-mounted lenses are compatible with the SP.
5: Removable camera back with single locking latch.
6: Non-removable film take-up spool.
7: Universal flash synchronization socket for expendable- and electronic-flash located on the front left-hand edge of the camera body.

Prices for the new Nikon equipment are as follows: SP with 50-mm *f*/2 lens, $369.50; SP with 50-mm *f*/1.4 lens, $415; SP body less lens, $265.

After our three critic-photographers had given the Nikon SP and its accessory motor-drive unit extensive on-the-job tryouts over a period of several weeks we got them together to find out what they'd decided. Here's their verdict:

SCHWALBERG: Well, does somebody have an opinion?

SHORR: The SP is as smooth and easy to operate as the S2, and the new viewfinder system is an absolute flip. Shooting that baby and the basset-hound sequence I used my 105 (*the 105-mm f/2.5 Nikkor lens*) and for the first time I was able to shoot with this lens through one window, with the rangefinder spot always in front of me. Accessory viewfinders are the bane of my existence.

FEINGERSH: I don't like the wide-angle finder—maybe it's OK for emergencies, but not for careful composition . . .

SHORR: It's OK for me.

FRIED: I really think they're both very close, and from an over-all point of view, the SP viewfinder system is at least as good since it handles more lenses.

SCHWALBERG: Did any of you guys notice the automatic parallax correction?

SHORR: I wondered why I didn't cut off any heads . . .

FRIED: Let's talk about the motor . . .

FEINGERSH: It isn't fast enough—3 frames per second isn't enough—real action sequences need at least 7 or 8.

FRIED: Three frames per second is extremely valuable . . .

SHORR: Quite!

FRIED: Look, guys, for years we've looked at every new piece of equipment and asked ourselves "Will this help make better pictures?" The answer for this motor gizmo is "Yes," even if Ed doesn't think it's fast enough for him, because it's going to help people to get pictures that they might otherwise miss. The other day I was trying to shoot a sequence on my two-year-old daughter rushing to greet my wife after she returned from the hospital. (*Larry's wife, Nancy, added a second baby daughter to the Fried menage about a week previously.*) I got two shots of Lorry running toward Nancy, and then I saw a terrific kissing shot in the viewfinder. But I was in the middle of winding the next frame, so I missed the picture. I'm sure that I'd have had it with the SP motor.

FEINGERSH: I agree a hundred per-

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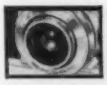

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B—OPTA-VUE SLIDE FILES, contain FILM-GARD®, new chemical that adds years to slide life. Handsome, compact, lightweight.

No. 300 for 300 slides, 35mm or super slide $2.95

C—OPTA-MOUNTS, lifetime slide binders, with pre-washed glass and FILM-GARD® treated plastic, snap together quickly, easily.

LP-35 for 35mm & super slides—
20, $1.95; 100, $8.95

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OPTA-VUE

cent—I meant 3 frames per second isn't good for real action, like most sports.

SHORR: I think I can settle this. The SP motor drive fills the gap between shooting a series of related stills with a lever-action camera, and making a true split-second sequence with real high-speed equipment. I think it's a most valuable intermediate-speed device.

FRIED: I've a complaint. The shutter speed wheel is too loose.

FEINGERSH: They had to make it a bit loose to accommodate the new Nikon exposure meter, but I'm sure that they'll be able to get these wheels tightened up.

SHORR: Incidentally, this wheel is a real improvement—it doesn't spin around when you release the shutter, and it rotates all the way around without stopping so it's easier to change from a very high to a very slow shutter speed. And in the dark, the big numbers are a help.

FRIED: Of course, the synch plug is the same as on the S-2, but it's still a big advantage to have only one plug for everything, and I wish other manufacturers would notice where the Nikon plug is located. Best possible position.

SHORR: Two improvements I'd like to see would be to make the finder frame lines continuous, and in such a way that only one frame appeared at a time instead of piling up the way they do so that if you're set for 135 you've also got the 105, 85, and 50 frames.

FEINGERSH: This adding frames doesn't bother me—I even like it in a way because the extra lines are more like my ideal finder, one with a black field surrounding the image.

FRIED: The extra frame lines might actually be an advantage to an inexperienced photographer, if he had the lenses.

SHORR: It would show him what the other focal-length lenses would give him.

FRIED: The built-in wide-angle finder is a big advantage; having to use an accessory finder for the 35-mm lens is a big nuisance.

SHORR: Concur! Concur!

FEINGERSH: Look—this 35-mm finder is fine for emergencies, but any other time I'd prefer to use a good accessory viewfinder like the Imarect. I think it's important that in the SP the Nikon people have preserved all of the advantages of the S-2 like the removable back, permanent take-up spool, wheel focusing, and all that, in addition to having added a whole lot of new features, most of which I like. But some new features like this wide-angle viewfinder and that self-timer are of no practical use to me personally. Even so, I think that the SP is at least as good as any other camera available to the working magazine photographer.

FRIED: It stacks up as a really top-flight miniature, and this motor deal is going to make a lot of guys want it.

SHORR: With its universal viewfinder and motor drive the SP fills the bill as a practical professional 35. (*Note: the foregoing opinions are those of the photographers interviewed and do not necessarily reflect the opinions of* POPULAR PHOTOGRAPHY *Magazine.*)—▶

Bathroom Flash for Kids

(*Continued from page* 73)

need for less exposure. Ward used a twin-lens reflex camera synchronized at X and a shutter speed of 1/25 second, aperture varying as indicated below.

Because of the small size of the room and because he wanted a large image of his subjects, Ward shot most of his pictures from a distance of about four or five feet. He took some shots with a conventional-design M2 reflector, which throws a sharp, narrow, intense beam of light, reducing its harshness with a diffusion shield in front of the bulb (a clean white handkerchief would have done as well). Exposure, at 1/25 second, was *f*/22. Next, he tried a Heiland Foto-Mite, a shallow, saucer-shaped reflector which throws softer, more even illumination than does a conventional design (see *New Trends in Flash*, POPULAR PHOTOGRAPHY, May, 1957), and increased his exposure one stop to *f*/16. Ward recommends using a clear plastic shield in front of the bulb for protection when shooting in close.

Next, Ward experimented with bounce flash, aiming his reflector at the light-colored ceiling. The diffuse, relatively shadowless lighting—amply bright in the small bathroom—takes care of the over-exposure problem created by use of direct flash, and eliminates harsh reflections from tiles and the shiny white tub. His exposure for bounce was *f*/16 for an M2 in a conventional reflector, *f*/11 when the Foto-Mite was used.

Still a third technique which works well in a small, light-colored room is to use the bare flashbulb itself, without a reflector. You get a combination of direct light from the bulb plus extremely diffuse bouncelight as the scattered rays are reflected onto the subject from every angle. Ward says, "The bare-bulb technique uses the whole room for a reflector although much of the light will come from the direction of the bulb, producing open shadows and nice modeling." Ward's bare-bulb exposures were *f*/11. He suggests placing the bare bulb slightly behind the camera, if possible, to prevent direct light from striking the lens.

The M2 bulb is especially helpful for users of simple box-type cameras, and in fact, was designed for this purpose. Ward points out that box cameras (most have a shutter speed in the neighborhood of 1/30 second) can stop a fair amount of action because the effective duration of an M2's flash is a brief 1/125 second. To take bathroom snapshots with a simple camera, Ward recommends using a No. 1 closeup lens and placing the camera 5½ feet from the subject. For direct flash, use an M2 reflector plus a diffusion shield or white handkerchief in front of the bulb. If you can remove the flashgun from the camera or tip it up toward the ceiling, try bounce flash also, in this case without diffusion.

Beware of hotspots and glaring reflections, Ward warns. He recommends covering the bathroom mirror with a towel and to avoid shooting directly into shiny plumbing fixtures with direct flash. Bounce flash, of course, eliminates most of these problems.—▶

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Camera-Projector

(*Continued from page* 121)

The camera, which has the look of a quality 16-mm unit, is a compact engineering feat. On the camera's front is a four-lens turret. Yes, a four-lens turret which takes a standard, wide-angle, telephoto, and projector lens. Each lens is a true lens, not just an adapter with the elements of the normal lens tucked into the camera body. A zoom finder, the kind previously available only on high-priced cameras, is positioned at the side of the camera. You don't have to wind this camera because it's powered by 3 flashlight batteries.

The projector takes a 300-foot reel of film, has a standard 400-watt projection lamp, threads by just slipping film into position, and projects a steady, non-flickering picture.

The innovations and mechanical short cuts on the Wittnauer Cine-Twin are so numerous that they vie for preference. Let's consider the features of the camera-projector one by one. First, the camera.

Battery power. The camera is powered by three flashlight batteries. They are fitted into the back of the camera by means of a novel screw-in contact device. Should a battery ever leak, the battery compartment is completely sealed off from the camera mechanism and can be wiped clean with a damp rag. The reason for selecting ordinary flashlight batteries as the power source was that they are readily obtainable throughout the world.

Zoomfinder. The finder is a true optical finder (one in which the elements move) which can be quickly set for any of the three standard lenses by moving a sliding lever in the top of the finder.

Safety Signal. Visible in the Zoomfinder is a neon tube. When this indicator is lit it shows that batteries are in proper operating condition and that the electrical circuits are complete. When the batteries are approaching exhaustion the light goes off, warning that the batteries should be replaced before two more rolls of film are used. (The manufacturer states that three flashlight batteries will run the camera for a year with average use—10 to 12 rolls.)

Footage indicator. This is an unusually large, readable scale which indicates at a glance how much footage remains.

Electronic film-speed control. In order to keep the single film speed (a standard 16 frames per second) exact and independent of battery conditions, the camera motor is equipped with an electric governor which compensates for variations in battery strength.

Turret. Next to each lens is a marking which indicates at a glance which lens is in shooting position—W for wide-angle, S for standard, T for telephoto, and P for projection lens. The turret has click stops. The three taking lenses are fixed focus.

Exposure guide. For beginners and cameramen without exposure meters, there is an exposure guide on the cover of the

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battery housing at the back of the camera. Once the photographer has picked the color on the guide that matches the lighting conditions he's working under, he can find the same color on all lenses. By setting his lens on the same color he can get proper exposure.

Loading. The camera features sprocketless loading. The cameraman just flips open the film gate and slips his film into position.

Now, let's consider the projector:

Film gate. An unusual film gate had to be designed for this camera-projector. Because the camera uses 16-mm film (double-8) and the projector used 8-mm film, the gate had to accept both. To thread the film for projecting, the gate opens up easily and film is slipped into place.

Light cut-off. Another problem that faced engineers in designing the camera was this one: film running through the camera must not be exposed to any light except that coming through the lens, while film running through the projector must be illuminated by a strong projection light. The engineers solved this problem by placing a cut-off plate beside the shutter gate. When the unit is operated as a camera the cut-off plate is automatically closed. When the front reel arm goes up in preparing the projector for a showing, the cut-off valve opens, allowing the lamp behind it to shine through.

Light source. The projection lamp, a standard vertical 400-watt bulb, is contained in the camera body immediately behind the turret. Two condensers and two mirrors complete the light-distributing system.

Reel arms. When the Cine-Twin is used for taking pictures the two reel arms fold neatly into the body of the camera. Except for the projector base and its power cord, no other accessories are required to convert from camera into projector.

Projector base. This unit contains the projector-drive motor and a blower-cooling system, both of which are automatically coupled to the camera when it is plugged onto the base. Turning a knurled knob securely attaches the camera body to the base unit. Nylon gears in the camera gear train and oil-impregnated bearings make further lubrication unnecessary.

These are the features of the Wittnauer Cine-Twin. Besides the camera there are several accessories made by the company. They include: an $f/1.9$ Chronostar 6.5-mm wide-angle lens ($47.50); an $f/2.5$ Chronostar 6.5-mm wide-angle lens ($37.50); an $f/1.9$ Chronostar 38-mm telephoto lens ($44.50); an $f/2.5$ Chronostar 38-mm telephoto lens ($37.50); a Duo case for carrying both the camera and projector (both units of the case can be fastened together or the camera section can be carried alone), in Vinyl, $18.95, in leather, $27.50; and the Cine-Twin filter sets which includes an 85A conversion filter, a skylight-haze filter, and a carrying case ($7.50.)—

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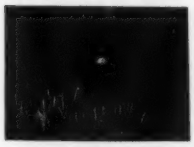
Flash Pictures

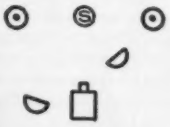
See pages 94-103

PAGE 94 Max Scheler, a free-lance professional who lives in Rome, photographed this chimney-sweeper in Munich, Germany. It was part of a picture story on the life of German chimney-sweeps. Scheler used a Rolleiflex with 75-mm Xenotar *f*/3.5 lens. He used two Braun Hobby electronic-flash units placed as shown in the diagram. Exposure was 1/100 second at *f*/8 on Ilford FP-3 film.

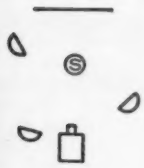
PAGE 95 Elio Ciol of Casarsa, Italy, used direct electronic flash mounted on his camera for this scene which he calls *Flower in the Night*. It was actually made in cloudy daylight with an exposure of 1/125 at *f*/16, using a red filter to cut down light in the background for a night-time effect. Rolleicord with 75-mm Xenar *f*/3.5 lens, Gevapan 30 film.



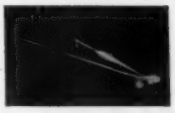
PAGE 96 Master portraitist Philippe Halsman, the man with more *Life* covers to his credit than anyone else, shot lovely Carolyn Lee in his studio in black-and-white while making test shots for a color assignment. He used a Graflex Portrait camera with 255-mm Bausch & Lomb *f*/4.5 lens, exposing 1/125 second at *f*/22 on Superpan Press film. With four speedlights he achieved a generally high-key exposure with delicate modeling.



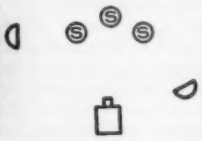
PAGE 97 No matter who the sitter is —whether movie starlet or diplomat— Halsman always ends a shooting session by asking the model to jump in the air for him. This has produced a remarkable collection of diverse personalities loosening up for one exultant moment. In this picture of Marina Vlady, he stopped the action with three speedlights using a Rolleiflex with 75-mm Tessar *f*/3.5 lens. Exposure was 1/500 at *f*/16 on Super-XX.



PAGES 98-99 Angus McDougall and Ralph Eicholz did the elaborate groundwork for this exciting night shot of a Flying Tigers' cargo plane rising from Mitchell Field (Milwaukee). Over 800 feet of cord was run onto the field from a hangar outlet to power six 1000-watt speedlight units linked to two lights. A two-way radio contact with the pilot was maintained to assure proper alignment of plane and camera. The photographers used a 4x5 Speed Graphic on tripod. The shutter was open at press focus to record the light streaks, then tripped to actuate the speedlights which recorded the plane itself. Film was Ansco Superpan Press.



PAGE 100 Jay Spencer, a news photographer and cameraman of North Miami Beach, Fla., caught an exciting moment during an Orange Bowl Basketball Tourney. This shot demonstrates the ability of speedlight to stop action which is seen only momentarily by the human eye. Spencer used a 4x5 Speed Graphic with 5¼-in. Graflex Optar *f*/4.7 lens, exposing for 1/400 second at *f*/16 on Royal Pan.



PAGE 101 Jacques Lowe of New York made this shot of composer-arranger Mitch Miller for *Argosy* magazine. He

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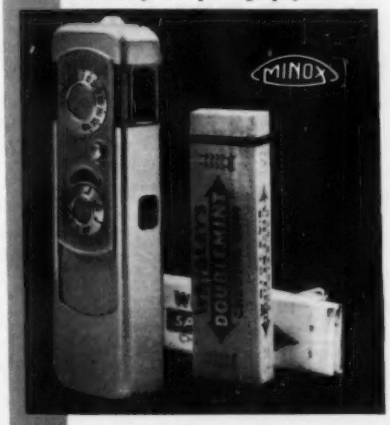

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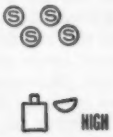
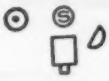
placed Miller's most famous song in the background in the form of a gigantic photostat, shooting with a Nikon with 35-mm Nikkor *f*/1.4 lens. Exposure was 1/250 second at *f*/5.6 on Tri-X film. Two speedlights were bounced on the ceiling.

PAGE 102 Robert Mottar of New York was strolling down a Paris street on Bastille Day—the equivalent of our Fourth of July—when he came upon a rollicking group of Paris youths and asked them to pose for him. He held the lamp of his portable Heiland speedlight high above his head, carefully moved in for the close-up, then fired away. Mottar used a Nikon camera with 50-mm Sonnar *f*/1.5 lens on Tri-X film, exposing at *f*/16.



PAGE 103 Willy Ronis of Paris made this self-portrait of himself in a mirror by using two flashbulbs, one in a flash gun, the other in a reflector on an extension cord. The extension flash was bounced off the ceiling; the flash gun was directed at Ronis' face but was cut down by putting a piece of white paper over the reflector to diffuse the light. The picture was made for amusement and no attempt was made to hide the wires or equipment. Ronis used a Rolleiflex with 75-mm Tessar *f*/3.5 lens on Super-XX film. He exposed 1/50 second at *f*/6.3.



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In next month's issue you will see how John Bryson interpreted the theme "Street Corner" and what our readers submitted on the same assignment. Now you can submit pictures for the new **CHALLENGE!** theme: "Party"—for which entries will be accepted until October 15.

Our professional is Joe Clark of Detroit, to whom we gave no instructions other than that he avoid, if possible, a children's party. We feel it will be more of a **CHALLENGE!** to our readers if they shoot other age groups, from teen-agers on up. People like parties, people are very much at their most outgoing at parties and we predict an onrush of good pictures.

For each picture selected to appear with Joe Clark's work, we will pay $25. Anyone—pro or amateur—is welcome to enter but no entries can be returned. Black-and-white prints only, 8x10 minimum size.

Please mark all prints plainly on their reverse sides with your name and address. Send them to **CHALLENGE!** POPULAR PHOTOGRAPHY, 366 Madison Avenue, New York 17, N. Y.—

Perutz Films

(*Continued from page* 118)

displaced professors, was the world's first fully panchromatic emulsion, Perutz Perchromo, introduced in 1904. Five others, more recent products of the same evolutionary process of research and development, are just now being introduced to American photographers. Long-time European favorites, these famous films run the gamut from superspeed to superlative image quality, and are now being supplied in three roll-film sizes as well as 20 and 36 exposure 35-mm.

PEROMNIA 25: High speed with a twist

Undoubtedly one of the world's fastest films, Peromnia 25's nominal ASA 250 speed rating reflects the standard safety factors, and practical user indexes from approximately 500 to 1,000 produce excellent available-light negative quality without any forcing. Grain structure (which benefits from exposures at 500-1,000 user indexes) is as good as that attainable with any of the existing high-speed materials, and better than some.

The really interesting thing about Peromnia 25 is its increased sensitivity to the red end of the white-light spectrum. *(Two other high red-sensitive panchromatic films currently available in this country are Adox's medium-speed KB-21 in its latest emulsion revision, and Agfa's high-speed Isopan Ultra.)* This increased red sensitivity is rather ably defined by the two speed indexes supplied by Perutz: Daylight, 250; Tungsten, 320.

After a few experiences with this film under low-wattage tungsten lighting conditions, a healthy respect for its ability to dig into dimly illuminated shadow areas is quite inescapable. The importance of this red-light bias is, however, not so much a matter of increased film speed as its improved available-light negative quality. Perutz' published 250/320 exposure indexes indicate a gain of just about ¼ of an *f*-stop under tungsten light. In actual practice this might mean,

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	New	Used
Aires 35 III, f1.9	$ 99.50	$ 52.00
Argus C-3,	69.50	19.95
Argus C-4, f2.8	84.50	35.50
Argus C-44, f2.8, MX case & flash	117.00	59.50
Balsey Jubilee, f2.8, case & flash	79.50	39.00
Canon IV S2, f1.8	284.50	119.00
Canon V, f1.8	325.00	207.00
Edixa C, f2.8 RFDR	49.95	27.50
Graphic 35, f3.5	89.75	38.00
Kodak Retina II, f2, RFDR		43.00
Kodak Retina IIA, f2, RFDR	127.50	62.00
Kodak Retina IIC, f2.8, RFDR	139.50	73.00
Kodak Signet, f3.5	75.00	32.00
Kodak Pony 135, f4.5	29.75	12.75
Kodak Bantam Spec, f2		59.00
Konica III, f2	119.75	61.00
Minolta A, f3.5	49.95	22.95
Ricoh 35, f3.5, case & flash	59.95	28.00
Voigt Prominent, f1.5	270.00	112.00
Voigt Vitessa f2	159.50	78.50
Zeiss Contessa, f2.8, RFDR	163.00	67.00

35mm SINGLE LENS REFLEX

	New	Used
Contaflex, f2.8 Tessar, MX	$149.50	$ 75.50
Contaflex II, f2.8 ctd Tessar	179.50	99.50
Exa, f2.9, MX	79.50	33.50
Exa, f2.8, Auto RF	165.00	89.00
Exakta V, f2 Biotar	249.50	117.50
Exakta VX, f3.5 Tessar	199.50	119.50
Exakta VX, f2.8 Tessar, Auto RF		158.50
Exakta VX, f1.9 Auto Xenon	341.70	182.00
Exakta VX, f1.5 Angenieux	369.50	179.00
Pentacon, f2.8 Auto	249.50	108.00
Pentacon, f2 Biotar	249.50	87.00
Rectaflex, f2 Xenon	329.50	118.00
Praktina FX, f2 Auto Biotar	297.50	167.00
Praktina FX, f1.9 Meyer Prosat	139.50	55.50

LEICA — CONTAX — NIKON

	New	Used
Leica IIIA, f2 Summar		$ 67.50
Leica IIIC, f2 Summar		87.50
Leica IIIC, f2 Summitar		114.00
Leica IIIF, f2 Summicron	336.00	173.50
Leica IIIF, f1.5 Summarit	357.00	198.00
Leica M3, f2 Summicron	447.00	268.00
Leica M3, f1.5 Summarit	468.00	268.00
Contax II, f2 Sonnar		63.00
Contax IIA, f2 Sonnar	345.00	114.00
Contax IIA, f1.5 Sonnar	374.00	152.50
Contax IIIA, f1.5 Sonnar	348.00	148.00
Nikon S, f2 Nikkor		98.00
Nikon S2, f1.4 Nikkor	345.00	195.00

LEICA, CONTAX LENSES

	New	Used
28mm f3.5 Nikkor	$149.50	$ 75.50
35mm f2.8 Biogon		46.00
35mm f3.5 Nikkor	89.50	48.00
35mm f3.5 Summaron		53.00
85mm f2 Nikkor	175.00	84.00
90mm f2.5 Angenieux	94.50	49.50
90mm f4 Elmar	90.00	47.50
135mm f4.5 Hektor	135.00	58.50
135mm f3.5 Nikkor	135.00	65.00
135mm f4 Sonnar	146.00	65.00
400mm f5 with reflex	400.00	179.00

EXAKTA PRAKTICA CONTAX D LENSES

	New	Used
28mm f3.5 Angenieux	$120.00	$ 63.50
35mm f2.5 Angenieux	99.50	53.50
35mm f2.8 Auto Zeiss	149.50	87.00
40mm f3.5 Macro Kilar	89.95	54.00
75mm f1.5 Zeiss Biotar	211.50	79.00
90mm f2.5 Angenieux	94.50	53.50
135mm f3.5 Angenieux	89.50	49.50
180mm f5.6 Tele Xenar	86.95	48.50
400mm f5.6 Meyer Tele Megor	199.50	87.50

2¼ x 2¼ REFLEX

Exakta 66, f2.8 Tessar	$319.50	$142.00
Minolta Autocord L, f3.5	124.50	67.00
Rolleiflex Automatic, f3.5	119.50	43.50
Rolleicord IV, f3.5 Xenar		53.00
Rolleicord V, f3.5 Xenar	134.95	58.95
Rolleiflex Standard, f3.5 Tessar		46.00
Auto Rolleiflex, f3.5 Tessar		61.50
Auto Rolleiflex, f3.5 Xenar, MX	187.50	109.00
Auto Rolleiflex, f2.8 Xenotar, MX	309.00	169.00
Auto Rolleiflex IIA, f3.5 Tessar	169.50	63.50
Yashica C f3.5 MX sync	46.50	37.95
Yashica LM f3.5 MX, meter	59.95	37.50
Yashicamat f3.5 MX, Auto	75.50	46.00
Minolta Autocord f3.5 MX	99.50	49.00

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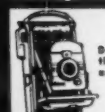

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f1.4 Nikkor lens; life-size rangefinder — viewfinder; rapid film rewind; positive flash sync selector. Reg. $345.00 Used.. **198.00** Case 7.95 1.25 post

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300 W Argus, Auto, Case	62.50	27.00
300 W AO Executive, Auto		38.50
300 W Brumberger (2¼x2¼)	59.95	31.50
300 W Goldo Manumatic	58.50	25.50
300 W Goldo Reflex (2¼x2¼)	86.50	43.50
300 W TDC Duo (2¼x2¼)	67.50	34.50
300 W TDC D	59.50	24.00
300 W TDC Headliner	39.95	16.50
300 W TDC Mainliner	59.50	25.50
300 W Revere Auto Case	69.50	38.50
300 W Viewflex Projectomatic	79.50	41.50
500 W TDC Duo (2¼x2¼)	84.50	52.50
500 W Revere 555 Auto, Case	89.50	42.50
500 W Robomatic Auto, Case	149.50	87.00
500 W Revere 888D Auto, Case	159.50	96.50
500 W La Belle 55 Producer Auto	94.95	42.00
500 W LaBelle 75 Auto, Remote, Case	154.95	89.50

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	New	Used
35mm Federal 135 f4.5 Cond.	$ 54.95	$ 32.50
35mm Focomat 1-C f4.5 Autofocus	183.00	114.50
2¼x2¼ DeJur 11, f4.5 Cond.	99.50	58.50
2¼x2¼ Exact 66 f4.5 Cond.	142.75	79.50
2¼x2¼ Solar 120 f4.5 Cond.	114.50	67.50
2¼x2¼ Sunray f4.5 Cond.	87.50	59.50.
4x5 Federal 470 f4.5 Cond.	142.95	85.50
4x5 Solarmatic f4.5	169.50	104.50
5x7 Elwood S-2 f6.3	97.50	67.50
5x7 Elwood SP-2	117.50	71.00
5x7 Solar	86.50	48.00
8x10 Elwood Commercial	319.00	177.50

PRESS CAMERAS

	New	Used
2¼x3¼ Pacemaker Crown f4.5 cpld RF	$299.50	$117.50
2¼x3¼ Ann Speed Graphic f4.5 cpld ctd. RF flashgun	219.50	80.50
3¼x4¼ Ann Speed Graphic f4.5 cpld rangefinder	—	83.00
3¼x4¼ Pacemaker Crown f4.7 cpld RF flash	—	117.50
4x5 Speed Graphic f4.5 CRF	249.00	79.00
4x5 Pacemaker Crown G Speed f4.5 lens CRF	299.00	119.00
4x5 Linhof f4.5 cpld RF flash	427.50	189.50
4x5 B&J f4.5 cpld RF flash	265.00	87.50
4x5 Busch f4.5 cpld RF flash	263.00	89.50

8mm CAMERAS

	New	Used
B & H 252, f2.3	$ 59.95	$ 23.00
B & H Sportster, f2.5	89.95	36.00
B & H 172A, f1.9 Turret	199.95	114.50
B & H 172 B, f1.9	164.95	87.50
Keystone K-40, f1.9	104.50	62.50
Keystone K-45, f1.9 Turret	139.50	79.50
Kodak Mag, f1.9	149.50	81.00
Revere 40, f2.5	105.50	47.00
Revere 44, f1.9	164.00	89.50
Revere B-63, f2.5 Turret	152.50	79.50
Revere 80, f2.5	97.50	38.00
Revere 84, f1.9 Turret	147.50	79.00

8mm PROJECTORS

	New	Used
B&H 253 Montarey 500w	79.95	39.00
B&H Regent, case 500w	179.95	78.95
Keystone K-109, 750w	149.50	67.00
Keystone K-70 Bright beam 500w.	64.95	34.50
Kodak Brownie 300w	62.00	33.00
Revere 90 750w	125.00	61.00
Revere 85 500w	114.50	42.50

16mm PROJECTORS

	New	Used
Bell & Howell 273 A, case	$199.95	$ 98.00
Bell & Howell 202 C, sound	719.95	367.00
Bell & Howell 285 C, sound	449.95	243.50
Keystone A-82	139.50	62.00

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for example, using f/2.2 instead of f/2, or f/4.5 instead of f/4. Our practical testing of Peromnia 25 indicates:

(1) Under low-wattage tungsten lamps (which abound in red) Peromnia 25 offers an appreciable gain in shadow detail and contrast, as compared to standard U.S. high-speed pan films. In any given situation, this gain is most apparent in the more poorly lighted subject areas, and in a variety of situations we invariably found that the lower the tungsten light-level, the greater the gain. However, in no case did this gain seem to exceed the ¼ stop (25%) increase predicted by the manufacturer, so that practicable user indexes were relatively unaffected. Best available-light ratings appeared to be 650 or 800, which are ¼ stop apart, and are also the widely used indexes for Kodak Tri-X and Du Pont S-X Pan.

(2) In daylight, Peromnia 25's high red sensitivity was really significant only in negatives that had been materially over- or underexposed, the overexposures resulting in a loss of detail and contrast in such things as red brick walls, compared with similarly treated U.S. materials. Extreme underexposures resulted in a comparatively greater loss of shadow density, but were otherwise very close to results with standard pan materials. At this writing our opinion is that if Peromnia 25 is rated betwen 500 and 1,000 for tungsten light, the same rating or ratings should be employed for daylight shots to preserve good tonal separation within the middle-tone and shadow areas. One big "however": Like all other high-speed films, Peromnia 25 has most to offer in dimly illuminated indoor available-light situations, while its extreme speed is more of a nuisance than anything else under most daylight lighting conditions.

(3) With orange and red filters (such as the Wratten "G" and "A") which are frequently used for extreme pictorial effects in daylight, the exposure-increase factors required for Peromnia 25 are somewhat less than those indicated for standard pan films. And, interestingly enough, this difference greatly exceeds the ¼-stop difference previously noted. Using Kodak Tri-X as a standard, the equivalent filter factors for Peromnia 25 appear to be: for the medium orange, 2X rather than 3X, an increase of one stop instead of 1½ stops; for the light-red, 4X instead of 8X, an increase of two stops instead of three. (Green-light sensitivity difference will be discussed later.)

(4) In development, Peromnia 25 is much like Tri-X and S-X Pan, the same user indexes responding to the same times and temperatures. For example: rated at 650-to-1,000, 12-14 min in Promicrol, 6-8 min in Ethol UFG, 10-12 min in D-76, and so forth.

PEROMNIA 21: Medium-speed film in a hurry

As we stated last August (*Can One Film,*

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CAMERAS, STILL

6. (f) Argus Photo Tip Portfolio: 5 Booklets on Flash, Filter Magic, Curtain Time, TV Pictures, Copying and Close-up. 25c. ARGUS CAMERAS, INC.

8. (a) Book: Complete reference book for amateur and beginner, "The Bolsey Guide," 128 pp., 70 illus., charts, tables, $1.95. (b) Circular: Bolsey Precision Cameras, features new Jubilee Threesome, prices. OBEX CO.

11. (a) Brochure: "Bino-Fotography." (b) Booklet: "How to Select Binoculars." D.P. BUSHNELL COMPANY.

76. (a) Booklet: 16 pp. well-illustrated booklet featuring the GaMi 16 subminiature camera. Complete description of camera along with accessories. 15c. GAMI CORP.

18. (a) Brochure: List and prices of 400 items for Exakta cameras. (e) Brochure: Automatic Exakta VX; New booklet. **18 (f) Catalog: 32 pages, illustrations on Exakta equipment titled "Exakta Continued," 10c. EXAKTA CAMERA COMPANY.**

23. (a) Booklet: For Prize Winning Pictures—**GRAFLEX,** Specifications, etc.

34. (a) Booklet: Minolta "A"; Minolta 35, Model II and Rokkor lenses. (b) Booklet: Minolta Autocord and Minoltacord. (d) Booklet: Minolta Autocord, description and accessories, illus. (e) Pamphlet: Minolta Autocord Model L; built-in Light value meter, description and accessories, illus. (f) Booklet: Six page well-illustrated booklet with down-to-earth instruction by Hal Reiff on how he uses his Minolta Autocord. (g) Folder: 4-page illustrated folder with specific hints on available light photography as told by Bob Duncan on using the Minolta Autocord. FR CORPORATION.

38. (b) Book: "PICTURES IN A MINUTE"—Illus. by 257 pictures, 156 pages on how to get the best 60-second photographs with Polaroid Land Cameras; ideas for indoor and outdoor pictures; 82 ways to use the Land Camera in business and professions; guide charts for all new Polaroid Land Films. $1.95. POLAROID CORPORATION.

39. (b) Brochure: New booklet on the Prakticon-Praktiflex FX. PRAKTICON COMPANY.

41. (a) Brochure: "Realist 35"; detailed facts on Model A & B, accessories. (c) Brochure: Realist 45, description, illus. REALIST, INC.

45. (a) Booklet: Omega 120; data, description. SIMMON BROTHERS.

37. (c) Booklet: Accessories for the Hasselblad 2¼x2¼ reflex camera. Illus. PAILLARD PRODUCTS, INC.

53. (a) Brochure: "Edixa"; describes 35mm Edixa cameras, accessories, lists prices. WIRGIN BROS.

72. (a) Brochure: Walzflex Model II Camera Kit, Description, Specifications, How to use Jumbo Mask, Accessories, illus. (b) Brochure: Walzflex Semi-Automatic; gives specifications, lists accessories and full description; illus. U.S. PHOTO SUPPLY CORPORATION.

77. (b) Booklet: The Unique Praktina FX; 20 pages, well-illustrated. Complete details and description of the Praktina FX; (c) Booklet: How to Use Our Praktina; detailed instructions and description along with accessories, 17 pages, well-illustrated; (d) Booklet: Praktina FX Rapid Sequence Spring Motor: 10 pages, illus. describes and explains the function and use of this unique accessory; (e) Booklet: Praktina FX 50-Foot Capacity Bulk Film Magazine: 17 pages explaining and describing use, setting film transport, etc. of the bulk film magazine, also lists various types of available bulk film; (f) Booklet: The All New Praktica FX 3, description of camera and accessories; (g) Booklet: How To Use Your Praktica FX 3; detailed instructions and description, well-illustrated; **(I) BOOK: THE MINIATURE CAMERA: 58 pages, illustrated, Tables, Graphs, choice of equipment. Industrial and Scientific Applications, etc. $2.25.** STANDARD CAMERA CORPORATION.

31. (e) Circular: 4 pages describing all Konica products and accessories, illus. also lists prices. KONICA CAMERA COMPANY.

***31.** (g) Booklet: "How to Buy a 35mm Camera"; 24 pages, illustrated. Originally 35c, now offered FREE. Konica Camera Co.

CAMERAS, MOTION PICTURE

7. (a) Brochure: The Auricon Cine-Voice; 16mm camera for professionals. (b) Brochure: Same as above, except for home movie makers. (c) Booklet: How to use your Cine-Voice, 16mm sound-on-film Recording Camera. (d) Catalog: 40 pp., illus. Auricon Cameras. BERNDT-BACH, INC.

30. (a) Booklet: 8mm full line covering all 8mm movie cameras and projectors. (b) Circular: 16mm full line covering all 16mm movie cameras and projectors. **(d) Book: Keystone Movie Scene Record Book; 15c.** KEYSTONE CAMERA COMPANY.

43. (a) Booklet: Cameras by Revere. REVERE CAMERA COMPANY.

63. (a) Catalog: Lists Wollensak Motion Picture Cameras, Projectors, Stereo Cameras and accessories, prices, descriptions. 12 pp., illus. WOLLENSAK OPTICAL.

MOTION PICTURE ACCESSORIES

29. (d) Booklet: "Editing for Better Movies" by Leo Heffernan, Reg. 50c, Special 10c. KALART COMPANY, INC.

37. (b) Magazine: "The Bolex Reporter," quarterly, available thru franchised Bolex dealers. PAILLARD PRODUCTS, INC.

37. (d) Booklet: Kern Motion Picture Lens Booklet about motion picture lenses for 8mm and 16mm cameras. In full color, charts, schematics, etc.

43. (b) Booklet: Features and operation Curvamatic Splicer. (c) Booklet: Curvamatic Splicer, details, data. (g) Booklet: Motion Picture Equipment. REVERE CAMERA COMPANY.

LENSES

16. (a) Leaflet: "How To Use Enteco Polarizing Screens and Enteco Polarizing Filters with Still and Movie Cameras." (b) Leaflet: New Enteco data and information charts on close-up photography with supplementary lenses. (c) Leaflet: Revised edition of Enteco "Filter Information," handy filter factor and film speed chart, filter types. ENTECO INDUSTRIES.

17. (a) Booklet: "Take A Tip From Hollywood," describes Elgeet lenses, instructions on home movies, etc., 36 pp., illus.; 10c. ELGEET OPTICAL COMPANY.

18. (b) Brochure: Steinheil lenses, wide angle, telephoto and movie lenses. (c) Brochure: Angenieux Lenses, complete information on construction, angles of view, relative magnification, range, focal length. EXAKTA CAMERA COMPANY.

28. (b) Folder: How to Use Your Elitar Soligor Lens, descriptive information on Telephoto, Wide Angle, prices. INTERSTATE PHOTO SUPPLY.

31. (d) Report: 2 pages, National Bureau of Standard Lens Test on Hexanon 48mm 6-element, F2.0 lens as used in Konica III. (c) Reprint of article in Popular Photography describing the Konica III camera. KONICA CAMERA COMPANY.

54. (a) Booklet: Raptar 8mm cine lenses. (b) Booklet: Raptar 16mm cine; **depth of field projection charts.** (c) Booklet: "How to Have More Fun With Your Camera." WOLLENSAK.

61. (a) Circular: Slip-On Filters. (b) Circular: Hi-Trans Filters. (c) Circular: Auxiliary Close-up Lenses for all movie and still cameras. (d) Circular: Photar Filters. (e) Circular: Tiffen-Polaroid Light-Polarizing Filter. (f) Folder: Neutral Density Filters, explanation of neutral density filters—what they are and how they work, illus. (g) Folder: Wallet size, Handy Filter Selector. Lists filters for color films, black and white films, also gives exposure guide for Kodachrome and Ektachrome films. (h) Brochure: Tiffen Filter Adapter Ring Selector lists Tiffen special adapter rings for specific still cameras, movie cameras; also lists Tiffen Screw-in Lens Caps and standard adapter rings, prices, etc. TIFFEN MARKETING CO.

69. (a) Brochure: Describes the Zunow f1.1 lens; gives specifications, depth of field chart, etc. ZUNOW OPTICAL CORPORATION.

72. (c) Brochure: Walz quality Movie Lens; complete description of wide angle lenses, telephoto lenses and standard lens, illus. (d) Pamphlet: illustrates how different type Walz filters improve your picture. U.S. PHOTO SUPPLY.

***31.** (h) Resolution Tests on 3 photographic objectives vs. Konica. Free report illustrated with graphs. Konica Camera Co.

***31.** (i) Booklet: Film & Filters. 48 pages, well-illustrated, describes all film and filters for B&W photography. Konica Camera Co.

PROJECTORS, SLIDE

21. (c) Folder: Describes Skan automatic "slide-cooling" projector, illus. G-M LABORATORIES, INC.

65. (a) Booklet: "How to Show Your Slides Without Losing Your Friends"; step by step procedure for building a slide program instead of a series of individual pictures. LA BELLE INDUSTRIES.

73. (a) Booklet: 25 Ways to Improve Your Slide Shows; 12 pp. illus. Informative step-by-step instructions and hints; also describes various Airequipt accessories for slide viewing and projection. AIREQUIPT MFG. CO.

38. (c) Booklet: "SLIDES-ON-THE-SPOT". . . discusses Polaroid Transparency System (black-and-white slides finished in two minutes), industrial-business-education applications, new 1000-speed Land Projection Film, Projector, Copymaker, title and chart-making kit, other components; 8pp. illus., (d) Booklet: "ON YOUR FEET" . . . gives pointers on making speeches illustrated by slides; tells how to make your own speech slides in two minutes, easily and economically, with new Polaroid Transparency System; tips on selecting room, screen, subject matter of slides; plus speech-making techniques; 12pp. illus. POLAROID CORPORATION.

FLASH EQUIPMENT

1. (a) Booklet: Various styles of lighting equipment for still pictures, indoor movies and 3-D shots. (b) Folder: Describes use of multiple floodlamp control box, gives electrical facts affecting use of flood and flash lamps; 6pp. (c) Catalog: Photoflood Lighting, highly descriptive and illustrated 16-page booklet of lighting equipment for

amateur and professional photographer. Includes lighting tips on indoor still and movie pictures with diagrams, charts, etc. ACME-LITE MFG. CO.

4. (a) Booklet: "How To Take Professional Flash Pictures With Your My-T-Myte Flashbulbs," 8pp., illus. AMPLEX.

22. (d) Photolamp Data—lighting, exposure, film speed for flash, flood, other lamps. (g) Booklet: The M-2 Bulbs; data information on the "tiny" bulbs. GENERAL ELECTRIC.

23. (b) Folder: Graflite. (c) Folder: Stroboflash. GRAFLEX.

24. (f) Folder: "Why You Will Get Better Flash Pictures with the Heiland Foto-Mite," 14 pp., illus., how to use the flash unit, with picture-taking hints. (g) "Take Your Pick" folder, illus., describing new Strobonars 61A, 62A, Seven and 71A, with light distribution comparison photos and accessories. (h) Folder: "The Heiland Professional Line"—Flash Units, Synchronizers and Standard Strobonars," describes Strobonars I, III, IV, Six, famous Press Model Synchronizers, Synchro-Customs, and complete accessories including cords, reflectors and battery cases; illus. HEILAND.

34. (c) Booklet: Minolta Jr. B-C Flash Gun. FR CORPORATION.

25. (a) Folder: Sun-Lite II; description and illus. on speedflash. (b) Folder: Sun-Lite 500, description and information, 6pp, illus. (c) Folder: Flash Saver, description, 4 pp. (d) **Manual: Sun-Lite II instruction booklet, detailed information on Sun-Lite II Portable Speed Flash, all 3 models; 20 pp., illus.; 25c.** HERSHEY MFG. COMPANY.

28. (a) Folder: Describes 3 models of electronic flash, Expert IV, Matador, Reporter I, prices. INTERSTATE PHOTO SUPPLY.

29. (c) Folders: Kalart Flash Equipment, BC-400 and Kalart Super Speed Flash. (e) How B. C. by Hy Schwartz. KALART COMPANY, INC.

35. (a) Booklet: Eveready Battery Engineering Bulletin on flash photography, 12pp. illus.; issued periodically. (b) Eveready Batteries, data, helpful information "B," "B-C" batteries. NATIONAL CARBON COMPANY.

36. (a) Leaflets: Technical information and data on use of the Megalume electronic flash. (b) Pamphlet: "Reciprocity Failure and the Determination of Exposure With Some Electronic Flash Equipment." (c) Test report: Nickel—cadmium batteries vs. wet cells. Chart and diagrams describing test and results. (d) Data Sheet: Use Of The Megalume With Infrared Film, development time, table giving types of filters and guide numbers to be used with standard infrared film. NEMS-CLARKE, INC.

46. (a) Brochure: Listing of lighting equipment for semi-professional or advanced amateur. (b) Brochure: Complete listing of lighting equipment for the amateur and movie maker. (c) Booklet: "Indoor Photos Made Easy," how to do indoor lighting, 10pp, illus. SMITH-VICTOR CORPORATION.

47. (a) Folder: "Flash is Easy—Flash is Fun"; complete flash instruction for advanced, amateur, beginner. (b) Booklet: How to Take Better Pictures and Have More Fun With Flash; 32pp. illus. (c) Booklet: Color Flash with Box Cameras. (d) Booklet: How to Throw a Snapshot Party; 24pp, illus. (e) Card: Wallet Size, gives correct F-stops. (f) Brochure: Basic Lighting Placement, illus. (g) Specification Sheets: 1. Blue Dot Line; 2. Projection Lamps; 3. Darkroom and Enlarger Lamps; 4. Super-floods. SYLVANIA ELECTRIC.

8. (c) Exposure Guide: Pocket size, gives correct F-stops. OBEX CO.

55. (a) Booklet: Descriptive data and information on Limelite "60"; 14pp., illus. (b) Folder: Describes Limelite Electronic Flash: 4pp. illus. (c) Folder: Yankee Complete Home Developing and Printing Kit, 6pp. illus., instructions for use of Yankee Photo Developing and Printing Kit; making your own negatives; making a picture from your negatives; loading the printing frame, etc. (d) Catalogue: Yankee photo products; 35mm slide trays and accessories, electronic flash, developing and printing accessories, illus., prices and description. YANKEE PHOTO PRODUCTS.

62. (a) Booklet: Electronic Flash. (b) Booklet: Brighter Way to Better Pictures, 16pp. FR CORPORATION.

72. (g) Pamphlet: Walz Pocket Flash-Gun; description and instruction on how to use, illus. U.S. PHOTO SUPPLY.

74. (a) #56-124 Series 400 Data Sheet—illustrates entire Series 400 line of ASCORLIGHTS, describing power supplies, light units and accessories. Units are portable, high-speed models in 100 or 200 watt-second capacity. (b) #56-98 Eight page illustrated 2-color booklet describing the "Sunlight" Series 800 ASCORLIGHTS. Articles give details describing use of an integrating light meter and a section on "How To Plan A Lighting Set." (c) #56-160 data sheet for microscope users describing new lighting principle utilizing a repetitive flash for viewing with a flick of a switch, the same light is used for taking single flash exposure. (d) AN No. 101—Description of lighting problem for night harness racing publicity photographs, how photographic set-up was made, with suggested lighting equipment. (e) AN No. 102—For Graphic Arts Users. "Copy Board Illumination for Making Positive Transparencies"; 2-page description of electronic flash units used in making color transparencies from original art work. Suggested equipment with exposure tests listed. (f) SERIES 200 ASCORLIGHT DATA SHEET: 6-page data sheet describes 6 basic models of Speedlights for advanced amateur and professional photographer; all guide numbers, accessories and technical data explained in detail. (g) SERIES 300 ASCORLIGHT DATA SHEET: 4-page data sheet describing self-contained portable Ascorlights designed for Home Portrait photographers and those who travel. (h) SERIES 500 ASCORLIGHT DATA SHEET: 6-page sheet describing studio portrait Speedlight units. Illustrated with all light units, accessories, technical data and guide numbers given. AMERICAN SPEEDLIGHT CORPORATION.

72. (i) Brochure: Walz Flash Master: 12 illus. describing and giving complete instructions for this flash attachment. U.S. PHOTO SUPPLY.

PROCESSING EQUIPMENT AND MATERIALS

10. (a) Brochure: Illustrating design and function of Model 45M Enlarger, 24pp. (b) Leaflet: Additional uses of Model 45M Enlarger. (c) Pamphlet: Discusses characteristics and operation of Model 57MB. (d) Book: A Brief 73 Year History of Enlarger Design, 32pp. CHARLES BESELER COMPANY.

27. (a) Leaflet: Time-O-Lite Printer. (b) Leaflet: Time-O-Lite Meters and Switches. INDUSTRIAL TIMER.

33. (a) **Booklet: "Marshall's Guide for Hand-Coloring Photographs," special section on heavy oils, 36 pp., illus. 25c.** (b) **Pamphlet: Color Chart; Marshall's photo-oil colors, price list of sets, accessories, 10c.** (c) Pamphlet: Make Life More Colorful, discusses photo-coloring; (d) Pamphlet: Information on the photo-oil pencil. (e) **Book: "Photo-Oil Coloring for Fun or Profit," 17 chapters, 148 pp, 22 illus., color charts, 9 color plates; explains detailed portrait work, right papers for coloring, how to mix paints, color harmony, landscapes, etc. $3.50.** JOHN G. MARSHALL MANUFACTURING CO.

45. (b) Catalogs: Omega A-2, B-7, B-8, D-2, D-3, E-5; (One on each model, specify which you want.) (c) Booklet: How To Buy The Right Enlarger. (d) Booklet: Omega Distortion Correction Attachment; (e) Booklet: Refractamatic 35. SIMMONS BROTHERS.

56. (a) Folder: Describes "Static Master," gives uses and prices, 3pp, illus. NUCLEAR PRODUCTS.

58. (a) Brochure: Discusses Lisco Cut Film Holder; gives data and information on exclusive features. LISCO PRODUCTS.

60. (a) Booklet: Clayton P-60 Fine Grain Developer; detailed instruction on use; 16pp, illus. CLAYTON CHEMICAL CORP.

64. (a) Booklet: Describes methods and materials for mounting transparencies for viewing and projecting. ERIE SCIENTIFIC CORP.

62. (c) Booklet: Cut Film Pack Developing Tank. (d) Booklet: Developing Tank. (e) Booklet: Proven Liquid Chemicals. (f) Booklet: You'll Enjoy Developing & Printing. (g) Booklet: Big Picture Fun for Everyone (Enlarger). (h) Booklet: Home Developing & Printing Kit. (i) Booklet: Developing & Enlarging; FR CORPORATION.

68. (a) Catalog and Handbook: 18 pages, illustrated, Nega-File slide-cabinets, accessories. (b) Circular: Four New Files by Nega-File, describes new files created by Nega-File to hold from 20 to 50 of the small plastic Kodaslide boxes, prices and types. NEGA-FILE COMPANY.

70. (a) Booklet: New booklet on magnifiers for shop, lab, darkroom by Bausch & Lomb. How to choose the right magnifiers for specific needs and how to get the best performance from them. Descriptions and illustrations. BAUSCH & LOMB OPTICAL CO.

77. (h) **BOOK: PHOTOGRAPHY UNDERWATER: 15 pages, illus., discusses underwater photography; selecting your camera, exposure, underwater lighting conditions, hints and technique. 75c.** STANDARD CAMERA CORPORATION.

78. (a) Brochure: Describes file drawers for slide collectors, with Add-A-Tray slide file that grows with your slide collection. Portable Slide Mfg. Corp.

*79. (a) Booklet: Contains a supply of Lens Tissues plus complete instructions for the cleaning of lenses. The tissues are manufactured in accordance with Government specifications for the wet or dry cleaning of coated or uncoated lenses. Lensclean, Inc.

EXPOSURE METERS

21. (a) Circular: Describes the Skan Quick Meter, price, information. (b) Booklet: Technical data, information on use and care of Skan Meters, helpful hints, 24pp, illus. G-M LABORATORIES, INC.

22. (e) Leaflet: GE Exposure Meters, significant features which adopt one of three GE meters to specific requirements. (f) Booklet: Color Control Meter and Variable Color Filter; how to achieve full control of color. GENERAL ELECTRIC.

51. (c) Booklet: Help in Selecting the Right Exposure Meter. 15pp., illus. Describes and discusses the workings of a meter. WESTON ELECTRICAL INSTRUMENT CORP.

72. (e) Pamphlet: Instructions on how to use the Walz Corona exposure meter, also lists emulsion speed number of film (ASA). (f) Pamphlet: How to use the Walz exposure meter with booster, Coronet B, specifications, illus. (h) Brochure: Walz Color Meter; 12 pages, well-illustrated. Gives complete instructions, chart showing Emulsion Speed Number and Color Temperature of color films., also a filter conversion table. U.S. PHOTO SUPPLY.

PICTURE TAKING ACCESSORIES

40. (a) Booklet: "New Super Quick-Set Universal Photographic Support," illustrates and describes new system for handling cameras and related accessories, 12pp. (b) Folder: "Whitehall Tripods." 6pp. illus. QUICK-SET, INC.

59. (a) Catalog: 12pp., illus.—describes all types of camera bags and leather goods of use to the photographer, lists prices. J. B. PERRIN CO.

67. (a) Catalogue: 10 pages describing the complete list of products. TEST-RITE INSTRUMENT CO.

71. (a) Brochure: "Slide & Movie Titles with Around the World Backgrounds." Lists all scenes available in various foreign countries which can be used as backgrounds for titles with your own wording. Sample title included. TITLE-CRAFT.

*80. (a) Brochure: 14 pages, well-illustrated showing all types of Hollywood Tripods, lists specifications and prices; also includes description of the Hollywood Monopod, and the Hollywood Clampocular. Pagliuso Engineering Company.

FILM, PAPER

3. (a) Booklet: Ilford Flat Films, 12pp, illus.: information and technical data. (b) Brochure: Ilford Roll Films, data and description; 6pp. (c) Circular: Ilford Microphen Developer, how to use it, and what it does. ILFORD CO.

43. (d) Booklet: Features and instructions on uses of Diaversal Enlarging Paper. REVERE CAMERA CO.

62. (j) Booklet: Special Adjustable Roll Film; FR CORPORATION.

75. (a) Book: "HOW TO MAKE BETTER COLOR PICTURES": 90 page book well-illustrated. Complete information on color photography with Anscochrome Film—Filters for, Processing of, Types and sizes, Close-Up Photography, Duplicate Transparencies, Exposure, Flash Photography, etc. 75c. ANSCO.

VIEWERS

2. (a) Booklet: Describes in detail features of Admiral Slide-Light Viewer; 8pp. ADMIRAL PHOTO PRODUCTS.

66. (a) Brochure: 4pp, illus., data, details, 35mm Opta-Vue hand viewer. OPTICS MANUFACTURING COMPANY.

62. (k) Booklet: Your Port-A-View; FR CORPORATION.

SLIDES, STEREO

43. (e) Booklet: Features of Shield 'N Vue Slide Projectors. REVERE CAMERA CO.

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One Developer Handle All These Situations?) Peromnia 21 belongs in the "high-speed-medium-speed" film category. Rated at ASA 100, this fine general-purpose film can easily be shot at 400 without increased development, and should probably never be exposed under 160 unless faced with extraordinarily high subject and/or lighting contrast.

Peromnia 21 provides an excellent choice as a standard film for photographers who require moderate speed with commensurately fine-grain structure, soft gradation with high resistance to choking-up in the highlight areas, as well as very possibly unrivaled exposure latitude. Developing times (at equivalent user indexes) closely follow those used for Kodak Plus-X, although in average daylight shooting an extra minute may be considered advisable.

PERPANTIC 17 and 18: Pushability in a thin-emulsion film

Perpantic 17 (35-mm, rated at ASA 40) and Perpantic 18 (roll-film sizes, rated at ASA 50) are two very interesting thin films in their adaptability to a wide range of exposure and development procedures. Compared with the six other medium-contrast thin films *(Adox KB-17 and R-17, Afga Isopan F, Gevaert Microgran 27, Kodak Panatomic-X and Ilford Pan-F)* Perpantic 17 and 18 offer a maximum of speed, flexibility, and latitude with somewhat lower contrast and very to moderately fine grain.

Development in a non fine-grain compensating developer, such as FR's X-22 variable-dilution liquid concentrate, is tricky primarily because the Perpantic emulsions tend to develop somewhat more rapidly than the others. FR, for example, recommends that X-22 be diluted 1:15 for medium-contrast thin films, and advise 8-12 min development for the first roll. In our experience, this is about two minutes too long for Perpantic 17 or 18, even with an 80 index for the 35-mm, and 100 with the roll film. At 6-10 min, however, results were a little softer than we prefer, and after some experimenting we came up with the following X-22 procedure which we offer as a tentative recommendation: Dilute 1:12 (instead of 1:15), develop for 5-6 min at 68 F, and discard after one roll. If two rolls are developed together, increase the time to 6-7 min, and discard after one development, as the Perpantic emulsion appears to exhaust a thin-film concentrate more seriously than other films of its type. Agitation should be given every 30 seconds—four or five vigorous shakes each time.

These films may also be used with most of the better no- to low-solvent fine-grain developers, with excellent results. Ratings of 64 or 80 for Perpantic 17, and 80 or 100 with the roll-film (Perpantic 18) emulsion, give extremely good results with about 3 min in Ethol UFG at 68 F with constant, gentle agitation. This developer appears to be particularly well suited to the Perpantic emulsions, producing a better grain-sharpness-speed-and-contrast compromise than any other tested. An interesting application of Perpantic 17 and UFG for daylight press coverage of baseball and other outdoor sporting events was originated by John Reidy, Chief Photographer of the New York *Daily Mirror*, who discovered that Perpantic 17 can be rated at 400, and very good results obtained with 8-9 min in UFG. Mr. Reidy joins this writer in cautioning the reader that this is not a recommended procedure for best results, but merely an interesting and, perchance, valuable expedient to hold in the back of your mind for emergency shooting conditions. Even with this 3X overdevelopment, the UFG-developed negatives give excellent over-all contrast, with detail in white home-team uniforms, and good penetration of the always pesky visor shadow cast by the player's cap.

PERGRANO 14: Sharpness instead of speed

Pergrano 14, long-time testing standby of the German camera and lens makers, is one of the sharpest ultra-thin-emulsion films manufactured today. Ranking with only two other films, Adox KB-14 and Afga Isopan FF, Pergrano 14 is capable of somewhat more brilliance than the former, and offers more speed and latitude than the latter. This film is rated at ASA 20, and in no case should user indexes exceed a probable maximum of 32, except when negatives of very high contrast (with very little shadow density) are desired. Our own preference for Pergrano 14 is a rating of 25 coupled with a 9-11 min development in FR X-22 diluted 1:9, as recommended. Pergrano 14, like any other maximum-acutance film, should be kept away from fine-grain developers which undermine contour-sharpness and resolution by either feasting upon image-forming silver, or reducing contrast within middle-tone and shadow areas, or both.

All of the Perutz films tend to be somewhat more sensitive to the green end of the spectrum than most other panchromatic materials. This tendency, which is most noticeable in the slower emulsions, and especially in Pergrano 14, results in somewhat superior rendition of green foliage without filtering. With a light-green filter (such as the Wratten X-1) this is more pronounced than a photographer oriented to U.S. films would expect, and the required factoring (compared with Kodak films) is about ½ to a full stop less.

Perutz 35-mm films are supplied in black plastic cassettes that are much prized by European photographers for subsequent bulk-film loading. To disassemble the cassette without breakage, first remove the short length of black cloth tape used to secure the removable end flange, then rotate the knurled flange about a quarter turn counterclockwise. To reassemble, start at the quarter-turn position, and rotate clockwise until the leading edge of the flange is parallel to the felt-lined cassette jaws.

The roll films are all supplied in light aluminum screw-top cylinders which offer great protection to the films both before and after exposure. The tight-fitting cylinders are unpainted to offer maximum heat reflectance, and many photographers save these containers to protect color films after exposure.—

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Contaflex III, F2.8 LVS	119.00
Contaflex IV, Exp. Meter	134.00
Praktica FXIII, F2.8 Auto Tessar	99.00
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23 Ann. Graphic RF, F4.5	$ 59.00
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33 Linhoff Super Tech FR, 3 Lenses Compl	339.00
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Revere Sound Proj. SP16	165.00
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Lordomat Standard, F2.8 Lordon	59.50
Konica III, F2	61.50
Kodak Signet F3.5	34.00
8mm CAMERAS	
Revere Mag. F2.5	$ 42.00
Revere 40 F2.5	48.00
Revere 84, Turret, F2.5	49.00
Wollensak 43, 3 Lenses	56.00
Wollensak 53, 3 Lenses	101.00
8mm PROJECTORS	
Keystone K75, 500 W	$ 37.50
Keystone 100 M, 500 W	51.00
Keystone K109 M, 750 W	72.00
Revere 85, 500 W	41.00
Revere 90, 750 W	62.00
2¼ x 2¼ REFLEX	
Rolleicord IV, F3.5 Xenar	$ 53.50
Rolleicord V, F3.5 Xenar	67.50
Rollei MX, F3.5 Tessar	105.00
Rollei LVS, F3.5 Xenar	119.00
Rollei LVS, F3.5 Tessar	129.00
Rollei 2.8D, LVS	169.00
Hasselblad 1/1000, F2.8	199.00
Minolta Autocord, F3.5 MFX	51.00

WORLD FAMOUS EDIXA STEREO CAMERAS

- Built-in Cpld. Rfdr.
- Matched F3.5 Steinheil Lenses
- Prontor Synchro Shutter

Reg. $79.00 — Special $49.50

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WITH F2 SUMMICRON CTD. LENS
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LEICA IIIF, F2 SUMMICRON, USED 174.00
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NEW LATEST AUTO EXAKTA VX
- F2.8 Auto Zeiss Tessar $219.00
- F2 Auto Zeiss Biotar 244.00
- F1.9 Auto Xenon or Quinon 249.00

Includes Factory Guarantee, Registration and Import Certificates. ACCEPT NO SUBSTITUTES.
EVEREADY CASE $11.00

NEW CONTAFLEX OUTFIT
LATEST MODEL F2.8 TESSAR, MX, AUTO DIAPHRAGM, TELEPHOTO LENS, W. A. LENS EXPOSURE METER
SPECIAL $154.00 NEW

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The manufacturer made us promise not to hint at his name. However, after one look at these specs, it won't take you long to guess.
- Built-in cpld. rfdr.
- Built-in Photoelectric Exposure Meter
- F2.8 ctd. Lens
- Full MFX Synchro 1 Sec. to 1/300 Sec.
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- 80 Watt Seconds - Same Power As A Number 5 Flashbulb
- Portable and A.C. Takes 5 Small D Cell Batteries Lifetime Flashtube

REG. $69.95 LESS BATTERIES
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With Famous Schneider Ultra Fast F2 ctd. Lens, Speeds to 1/1000 Built-in MX, Delayed Action, Auto Film Counter.
$109.50 NEW
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- with F2 Preset Zeiss Biotar Lens 139.50
- with F2 Auto Westagon Lens 144.00
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- COUPLED RANGEFINDER
- F2 Ctd. SCHNEIDER XENON
- COMPUR RAPID LVS 1/300

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Retina Longar Tele. Lens. Reg. $80.00. Sale $59.50.
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Universal Finder. Reg. $15.50. Sale $12.00.

FULLY AUTOMATIC WIDE ANGLE LENS
35mm—F3.5 Ctd. 6 Element FOR EXAKTA
Reg. $98.50
MINIFILM SPECIAL $59.00
BRAND NEW

ARGUS C3 AND ARGUS 300 WATT PROJECTOR
FAMOUS ARGUS C3 L. N. CASE FLASHGUN
Brand New 300 Watt Blower Cooled Argus Projector
(Newest 1957 Model)
ONLY $59.95 COMPLETE

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Dual Range, Incident Light Provision LVS Scale, with Booster and Two Leather Cases
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With F1.9 ctd. K.A. Lens, Turrret
ONLY $275.00
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	SALE PRICE
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Revere 84 Roll Turret F1.9	99.00
Revere 44 Mag. Turret F1.9	109.00
Revere P777 Proj. & Case	96.00
Revere P85D Proj. & Case	84.00
Revere 950 Proj., W.A. Lens & Case	119.00
Revere 888 and Case	109.00
Revere 555 and Case	68.00
Revere 553 and Case	59.00
Revere C105, 100 Ft. Roll Turret F1.9	168.00

NEW WOLLENSAK AT BIG DISCOUNTS

	SALE PRICE
Wollensak 43 Roll Turret, 3 F1.9 Lenses	$74.00
Wollensak 53 Roll Turret, 3 F1.9 Lenses	149.00
Wollensak 23 Mag. Turret, 3 F1.9 Lenses	179.00
Wollensak 18 and Case	128.00
Wollensak 715 and Case	122.00
Wollensak 815 and Case	114.00
Wollensak "1500"	141.00

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35mm F2.8 wide angle lens, 6 element click stops, rfdr. coupled, focuses down in 3½ ft. reg. $79.50
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FREE: Leather case with each lens. Viewfinder $4.95 ea.
$52.00 NEW

NEW HIGH SPEED TELEPHOTO LENS
(FOR EXAKTA, PENTACON, ETC.)
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reg. $99.95
NEW $39.95

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BIG DISCOUNTS UP TO 50%

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	Sale Price
Kodak Pony 135C F3.5	$ 26.95
Signet 40, F3.5, Flash	66.00
Kodak Signet, F3.5 Ektar	64.50
Retina IIC, F2.8 Xenar	99.00
Retina IIIC, F2 Xenon	119.95
Ricoh "35" F3.5, Case, Flash	44.95
Ricoh 500 F2.8 MFX	52.50
Argus C3, F3.5, Case, Flash	52.50
Argus C4, F2.8, Case, Flash	74.50
Argus C44, F2.8, Case, Flash	87.00
Aires III L, F1.9 MX, 500 Sec.	79.50
Graphic 35, F3.5, Case, Flash	67.00
Graphic 35, F2.8, Case, Flash	74.50
Robot Star, F1.9 Xenon	99.50
Bolsey B2, Case & Flash	39.00

BRAND NEW 8 & 16mm PROJECTORS

8mm Brownie, 300 W	$ 49.50
8mm Brownie, 500 W	62.00
B&H Monterey, Reverse 500 W	74.50
8mm Kodak Showtime 500 W	94.00
16mm Kodak Pageant Sound	367.00
16mm B&H 302C Mag. Sound	592.00
Ampro Stylist Deluxe Sound	305.00

BRAND NEW SLIDE PROJECTORS

TDC Headliner 303 Selectron & Case	$ 39.00
TDC Duo 300 W Proj.	51.00
TDC Duo 500 W Proj.	63.00
B&H Robomatic & Case	112.00
Graflex Constellation, 500 W Auto Changer	68.50
Graflex Constellation 500 W Auto Changer & Auto Timer	74.50
Argus 300 W Blower Cooled	29.50
Argus 300 W Auto Changer, CC.	46.95
Brumberger Riviera 2¼ square 300 W	39.50
Brumberger 500 W 2¼ Square Auto Changer	63.50
Realist 620 Proj. 2¼ Square	29.50
Viewlex Projectomatic, Case 6 Trays	54.50
Viewlex Powermatic 500 W, Case 6 Trays	84.00

BRAND NEW EXPOSURE METERS

New G.E. Mascot II Meter	$7.50
GE-PRI	23.50
GE-Guardian, Case	25.50
Argus C3, Case	12.75
Argus L44, Case	13.50
Weston Master III & Case	24.50

BRAND NEW REFLEX CAMERAS

	Sale Price
Yashica A, F3.5 Synchro	$ 22.95
Yashica C, F3.5 MX	36.95
Yashica LM, F3.5 MX, Built-in Exp. Meter	47.95
Yashicamat, F3.5 MX	56.95
Soligor 66, F3.5 ctd	74.50
Kalloflex Automat, F3.5	89.50
Edixa Reflex, F2.8 Steinheil	74.50
Super Ricohflex, F3.5 ctd	22.50

BRAND NEW 16mm CAMERAS

B&H 240A, F2.5 100 ft	$139.00
B&H 240T, F2.5 100 ft	169.50
B&H 200 EE F1.9	230.00
B&H 70 DR F1.9	307.00
Cine Kodak K100 Turret, F1.9	258.00
Cine Kodak Special II, F1.9	1020.00

BRAND NEW 8mm CAMERAS

Kodak Brownie, F2.7	$ 22.50
Kodak Brownie Turret, F1.9	63.50
B&H 220, F2.5	33.50
B&H 252B, F1.9	47.00
Kodak Medallion Mag. F1.9	79.00
Kodak Medallion Mag. Tur F1.9	119.50
B&H 172B Mag. F2.5	110.00
B&H 134TA Turret, F1.9	138.00
B&H Electric Eye, F1.9	134.95
B&H 252TA 3-F1.9 Lenses	74.50

BRAND NEW LENSES — EXAKTA, PENTACON, ETC.

28mm f3.5 Angenieux	$ 89.00
35mm f2.5 Angenieux	74.50
90mm f1.8 Angenieux	113.00
90mm f2.5 Angenieux	69.75
135mm f3.5 Angenieux	67.50
180mm f4.5 Angenieux	72.00
35mm Auto Flektagon	112.00
58mm f2 Auto Biotar	124.00
50mm f2.8 Auto Tessar	74.50
75mm f1.5 Biotar Preset	162.50
180mm f2.8 Sonnar Preset	249.50
50mm f1.9 Auto Xenor	127.50
135mm f3.5 Auto Tele Xenar	108.50
200mm f5.5 Tele Xenar PS	93.50
40mm f3.5 Steinheil Casseron	39.00
55mm f1.9 Auto Quinon	127.50
85mm f2.8 Steinheil Culminar	49.00
135mm f2.8 Quinar PS	112.00
200mm f4.5 Quinar PS	112.00

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What is the difference between one camera dealer and another?

They both sell you! So what's the difference? They possibly differ in service, price, information and in delivery. It's really not our place to compare ourselves, but it is your job to do so! Our camera technologists will give you a written unbiased report on anything photographic free! —whether it's a baby Brownie or a Leica. Free advice, speedy delivery, unbeatable low prices and a two year no charge guarantee. Won't you write us and see for yourself? Remember the axiom which is "A bargain is never a bargain unless you're completely satisfied."

REVERE CAMERAS AND PROJECTORS—NEW

	List	Our Price
35mm Proj. 888	144.50	99.70
35mm Proj. 888D	159.50	114.50
35mm Proj. 553	79.50	56.92
35mm Proj. 555	89.50	61.73
8mm roll C80 f2.5	97.50	61.73
8mm roll C83 f1.9	122.50	77.98
8mm roll Tur. C84 f2.5	122.50	77.98
8mm roll Tur. C89 f1.9	147.50	91.48
8mm mag. C40 f2.5	104.50	69.57
8mm mag. C41 f1.9	129.50	87.81
8mm mag. Tur. C44 f2.5	139.50	88.92
8mm mag. Tur. C45 f1.9	164.50	104.71
8mm mag. Tur. B63 f2.5	152.50	98.38
8mm mag. Tur. B64 f1.9	177.50	114.83
8mm 750 proj. P777	127.50	89.24
8mm 500 proj. P85X	114.50	72.97
8mm 750 proj. P90X	159.50	89.24
16mm sound SP16	325.00	229.50
16mm silent P48X	160.00	104.50
16mm 100′ roll C102 f1.9	194.50	136.70
16mm roll Tur. C105 f1.9	224.50	154.70
16mm mag. C37 f1.9	194.50	136.70
16mm mag. Tur. C39 f1.9	224.50	154.70
Stereo ST 33 f3.5	174.50	119.70
Recorder T1100	169.50	114.70
Recorder T700D	225.00	154.70
Recorder T700	235.00	168.50
Revere orig. mag.	1.45	1.15

WOLLENSAK

8mm roll Tur. f1.9	99.50	74.50
Recorder 1500	189.50	144.50
8mm proj. 715	162.50	129.50

REALIST 620

Projector for 2¼x2¼ or 35mm Slides ..... 39.95 — **29.89**

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	Reg.	Sale
STAR D CONQUEST (elevating type)	21.50	13.49
DELUXE TRIPOD CASE	5.95	1.95
Star D Cont Mark III	25.95	16.99
Quick Set Champ II, 3 Sect., Elev., w/Pan Head	34.00	22.89
Quick Set Husky II, 3 Sect., Elev., w/Pan Head	47.00	32.95

DARKROOM ACCESSORIES
BRAND NEW

	List	Sale
Yankee Lordomat 20 Tank	10.95	7.30
Yankee 4x5 Utility Tank	3.95	2.92
Yankee 4x5 Agitank cut film	8.95	6.95
Yankee Safe lite w/3 Filters	4.95	3.89
Airequipt 4 Way Fixed Easel	8.07	5.65
Airequipt Dialmaster Easel 11x14	17.06	11.95
Airequipt Photocrat 4x5 Printer	14.34	9.95
Airequipt Jr. Printer 4x5	10.77	7.55
Brumberger 5x7 Adj Metal Printer	24.95	17.75
Brumberger 5x7 Safe Lite OA	5.95	4.35
Brumberger 8x10 Paper Safe	17.75	8.97
Brumberger 11x14 Paper Safe	24.95	13.95
Fedco Focus Rite Enlarging Aid	3.25	1.75
Fedco No. 100 Dryer 111/2 x15	9.95	6.75
Gra Lab #168 Luminous Timer	24.95	17.21
Premier A2 Roto Dryer 24x28"	49.95	33.95
Premier A1 Roto Dryer 12x29"	27.50	18.95
Staticmaster 1" Brush	4.95	3.50
Spot-O-Matic Enlarging Meter	15.00	10.97
Nikor 35mm Tank single reel	8.95	6.75
Nikor 120-620 Tank w/Reel	9.95	7.49
Nikor 20 Exp. 35mm wide space reel	4.95	3.89
Nikor 36 Exp. 35mm wide space reel, or 620, 120, 127	4.95	3.89
Nikor #33 Tank with 2 35mm reels	12.95	10.77
Kodak Timer Minutes & Seconds	9.75	7.50
Kodak 35mm Day Load Tank	9.95	7.49
Morse G3 35.8 16mm Dev. Tank	34.00	26.75
Kodak Automatic Tray Siphon	4.95	3.79
Sun Ray 11x14 Metal Adj. Easel	7.75	5.49
Sun Ray 8x10 Metal Adj. Easel	5.50	3.95
Precise 11x14 Metal Adj. Easel	6.75	4.95
Carr Cut Film Hangers 4x5	1.20	.81
6" all metal Trimmer	1.98	.98
Foot Switch, Kriser	8.50	6.45
BFI Chemicals 7 Minute Processing Kit	23.75	19.50
Arkay 16x20 Lordmaster Print Washer	89.50	66.92

8mm & 16mm LENS BARGAINS

Focusing in Black Anodized Chrome mounts. (Standard "D" for 8mm, Standard "C" for 16mm) All click stops, color corrected, Built-in filter retaining rings. 100% guaranteed. Full satisfaction or money refunded in 20 days. No one could offer this value for less money. In B&H 8mm write for prices.

8mm

	List	Sale New
½" f/1.2 foc.	$89.50	$53.70
1½" f/1.9 foc. Tele	38.75	12.95
6.5mm f/1.9 foc. W/A	44.50	19.95
1½" f/3.5 FF (Chrome)	19.95	6.25
1½" f/1.4 foc. Tele	69.50	19.95

16mm

	List	Sale New
15mm f/1.9 foc. W/A	$59.95	$32.50
13mm f/1.5 foc. W/A	89.50	46.50
3" f/1.9 foc. Tele.	59.95	26.95
3" f/1.5 foc. Tele.	89.50	46.50

BRAND NEW for Leica Fans

135mm f/3.5 Telephoto lens, RFDR. Coupled, four elements in black anodized mts. List $79.50. Sale NEW **$49.92**
Same for Leica M-3 ..... $59.92

High-speed Tele Lens

(For Exakta, Pentacon, Practica, etc.) 135mm f/2.8 Pre-set list $89.95. Sale NEW **$38.72**

Brand New Brownie 300 8MM Projector List $64.95 Sale New $48.70
Brownie 500 List $79.50 Sale New .$58.10

AIREQUIPT MAGS

	New	Our Price
	$2.25	$1.48
Trays for Viewlex Changer	1.50	.42
Trays for Revere Automatic Proj.	1.45	.79
Trays for TDC Economy	1.00	.49
Case (holds 30 Airequipt mags)	15.95	7.49
Case (holds 12 Airequipt mags)	9.50	3.95
Case (holds 12 Revere mags)	11.95	5.49
Case (holds 30—8" LaBelle trays)	15.95	7.95
Case (holds 24 trays for Revere, TDC, Airequipt, Viewlex)	13.95	6.87
Marshall Oil Sets		
Student Set	2.95	2.37
Academy	5.40	4.19
Master	13.95	10.37
Aireq Auto Chgr.	14.95	10.95

EXPOSURE METERS NEW

	List	New Special
Norwood Director S.	32.50	21.97
Dejur Dual Prof.	29.95	17.95
Alpex Clipon	12.95	6.95
Alpex, w/c, chain	9.95	5.95
GE Guardian	34.50	24.98
GE Dynacel	7.95	5.92
GE PR1	32.50	19.90
Sekonic Leader	8.45	6.95
Sekonic Cell	3.95	2.95
Sekonic Clip-On	9.95	7.42

BRAND NEW Electronic Flash
ULTRABLITZ * JET ONLY **$44.95**
List 69.95
Batt. Cord Bracket Add $2.95

BELL & HOWELL MONTEREY

8mm Movie Projector & Case!
- 500-Watt Lamp
- f1.6 Coated Lens
- Blower Cooling
- Fast Rewind
- Reverse
- Stills
- Case

List $99.50
Your cost NEW **$63.97**

NEW SLIDE PROJECTORS

	List	Sale New
Argus 300 W Auto Changer, case	62.50	45.95
Argus 300 W. Blower	39.50	28.50
Graflex Constellation 500 W. Auto Slide Timer	99.75	73.50
Graflex Constellation 500 W. Auto Changer	89.75	67.50
TDC Streamliner 500 Selectron & CC	89.50	66.00
B&H Robomatic Proj. & Case, w/Timer	149.50	111.00
TDC Stereo Proj. (500)	149.50	111.00
TDC Stereo Proj. Viewer	144.50	107.00
TDC Duo 500 Proj.	84.50	62.00
TDC Mdl. D Selectron & CC	79.50	58.95
TDC Duo. 300 Proj.	67.50	50.00
Kodak Signet 500	77.50	54.92
TDC Headliner 303, Selec.	59.50	42.50

MOHAWK MIDGETAPE POCKET RECORDER

Battery operated 3⅞" in width, 8½" in length, lightweight, 1 hour recording. A must for business execs., sales managers, reporters, radio, TV, on-the-spot interviews, insurance investigators, etc. Free Literature.

Trade-ins accepted.

List $249.50.
SPECIAL L.N. **$152.50**
incl. bat., mike, earphone & tape.
Send for free Brochure.

Brand New R.F. Pentaprism for Exactas, V, VX, & Exas. split image rangefinder combination with viewfinder. Complete with extra ground glass. List $0.00
Brand New 18.98
Case .99

Photo-Electric EXPOSURE METER WITH BOOSTER

Complete ASA index. Lens stops F:1 to F:32, shutter speeds 30 sec. to 1/1000 sec. Complete with Booster, Leather case and Chain.
Reg. $12.95 **$6.74**

Aires IIIL Brand New latest LVS Model List w/case $112.00—Special Brand New $79.72.

University Camera "Buys"*

	List	Sale New
Olympus "35" F2.8	69.50	49.99
Konica III S F2	124.50	83.50
Contaflex III	176.00	109.50
Contaflex IV	199.50	129.25
Richo 500 F2.8	69.50	49.50
Minolta A2	69.50	49.50
Yashica A w/case	35.95	23.50
Yashica C w/case	54.95	36.95
Yashica LM w/case	69.95	46.50
Yashica—mat w/case	86.50	61.75

*Your equipment in trade—write.

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Braun Hobby Standard L.N.	39.50
Braun Hobby Automatic L.N.	68.50
Robot Royal f/2.8 Xenar L.N.	129.50
Kodak 35 RF w/f3.5 L.N.	29.95
Zeiss Ikonta III SPECIAL	106.50 63.00
Kodak 2¼ x 2¼ Ref/3.5	
Soliger Ref Semi-Auto NEW	42.50
L.N.	155.00 49.95
Retina IIa F2 Xenon L.N.	164.50 79.50
Leica 3F F2 Sumcrn L. N.	313.00 209.50
Pentacon F8 Auto 2.8 Tess	149.50
Lordomat F2.8*	99.50 57.50
Samoca F3.5	29.95 21.75
Kalimar S F2.8	44.50 31.50
Robot "36" F1.9	329.95 247.50

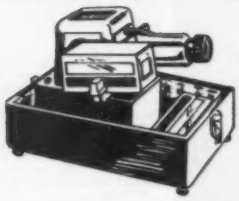
*Your equipment in trade, write.

List $22.95

MODEL 2700 Superpod

- Geared for quick action raising and lowering
- Extra 90 Degree tilt on panhead
- Ball Level on tripod
- Ratchet to prevent camera from falling
- Degree marks for vertical pictures
- Adjustable camera screw

$11.97 Case list 5.95 Special 1.95



300 watt Famous Make #777 w/case/auto aireqt chgr. 2 x 2. Blower cooled—NEW list $69.95.
Special New **$32.95**

EMEL C-93A PRO-TURRETMASTER 8mm

- Standard D Mt.
- Sgl frame film counter
- Lap dissolve
- Positive Tur lock
- Auto governor
- Zoom VF
- Parallax cor
- Five speeds

Write for list and trade-in.
List $199.50 less lens

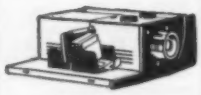
Kodak Retina IIIc with Case
List $178.50
Sale NEW **$126.29**
Retina IIc w/case
Special New **99.50**
Orig. E.K. Import Certif.

NEW C. O. C. PROJECTION VIEWER ONLY

$26.92 including Field-case

- Table Model for 2x2 Slides
- Self contained projection-viewing system
- 6x6" viewing area, opalescent screen built into case
- Smooth operating automatic changer
- Capacity 36 paper mounted 2x2 slides
- Focusing f3.5 projection lens
- Double condenser system, even illumination
- Metal case for maximum protection and portability
- Regular $37.95
- Field Case $4.95

Kodak 300 2x2 35mm Projector



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List 64.50 with self-storing changer
Spec. **46.92**

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TELEPHOTO OR WIDE ANGLE LENSES

To fit all cameras • Color Corrected • All brand new
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The following cameras . . .
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- Baldina
- Bauer
- Bell & Howell
- Bolex C-8, B-8, H-8, H-16
- Bolsey Jibilee
- Certo Super 35
- Circo 35
- Circoflex B, C, D
- Contaflex I, II
- Contaflex III, IV
- Contax
- Contessa
- Contina
- Diax Ib, IIb
- Edinex
- Edita A, B Exa
- Kalimar B
- Kaloflex
- Kodak Pony
- Kodak Pony 828
- Kodak Retinette
- Kodak Retina IIa
- Kodak Retina IIc, IIIc
- Kodak Signet 35, 40
- Konica I, II, III
- Lordomat
- Mercury II
- Olympus 35S
- Polaroid 80, 80A
- Polaroid 95, 95A
- Polaroid 95B, 700
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- Super Baldina
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Sturdy, yet light 3-section construction with governed spread (cannot collapse) extends to over 7 feet yet closes to a little over 2 feet. Crank operated gear raises and lowers camera gently yet quickly. New automatic height lock prevents center pole from dropping accidentally. Head adjusts horizontally and vertically with single-twist locking handle. Now equipped with additional right-angle tiltplate for vertical shots without loss of other adjustments. Reversible center pole allows "straight-down" shots and permits use of the tripod as copy stand and table top camera support.
The most versatile tripod ever designed. Even though the Multiport IIIa has many new additional features, the list price remains unchanged at $29.95.

Feature of the Month Special Multiport IIIa Tripod - - - - **$17.85**

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Please send me descriptive literature, price list, accessory list, and a sample copy of your Exakta News.

☐ **I have an Exakta (Model)**
Please send your Exakta News regularly; also send accessory lists and bulletins and put my name on your mailing list.

☐ **I would like to establish credit.**

☐ **I would like to trade equipment.**
I have listed the items I have and the items I want on a separate sheet attached hereto.

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Color • Black & White Guaranteed till Dec., 1958

SIZE	TYPE	QUAN.	PRICE
120, 620, 127, 116, 616	Super XX	10 rolls	2.29
127, 120, 620	Ektachrome Aero	6 rolls	2.99
120, 620	Infrared	10 rolls	2.29
120, 620	Infrared (ASA 100)	10 rolls	3.49

35mm COLOR

Guaranteed till Dec. 1958

SIZE	TYPE	QUAN.	PRICE
35mm x 20 exp.	Ansco Color Day. or Tung.	5	3.99
35mm x 50'	Ansco Color Day. or Tung.	1 roll	7.49
35mm x 40'	Ektachrome Day. Aero ASA 32	1 roll	4.99

(FREE: 6 empty Cartridges with bulk film)
1½ gal. Ektachrome Processing Kit.....$2.50

8mm & 16mm B&W MOVIE FILM

Guar. till Dec. 1958 • Processing Included

SIZE	TYPE	3 for	6 for	12 for
8mm x 25' Dbl.	Super X	3.49	6.39	11.29
8mm x 25' Dbl.	Super XX	4.49	8.39	16.29
16mm x 50' Mag.	Super X	6.49	12.39	24.39
16mm x 100' Roll	Super X	8.49	16.39	31.29
16mm x 100' Roll	Super XX	9.49	18.39	35.29
*16mm x 50' Roll	Rev. ASA 50	10 for 3.79	25 for 8.49	
16mm x 50'	Empty Mags.	5 for 2.79	10 for 5.29	
*16mm x 100'	Neg., Plus-X Super-X, Bkgrnd-X	3 for 2.79		
*16mm x 1200'	Neg., Super-XX	2 for 13.99		
*16mm x 50' Mag.	Plus-X, XX Neg.	3 for 2.79		

*Processing not included.

AMPRO 16mm SOUND PROJECTOR

100-120 volts, AC. Complete 2-piece outfit: f2 Lens, Amplifier, Motor, Lamp and Speaker. All in top condition!

Value $475 — **139.95**

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for Aerial Roll Film & Paper

- Motor driven
- Enclosed cabinet
- For sizes: 5"-10" wide x 215'
- Includes all integral parts . . . accessories and heating unit

Gov't cost $760 ..... **189.99**

MORSE G-3 PROCESSING TANKS

Develops up to 100 ft. of 8, 16 or 35mm film in ½ gallon of solution. Reg. 35.00.

ONLY **26.95**

FREE! 12 rolls 16mm x 50' Reversal Film ASA 50, included with tank.

8mm—16mm—35mm MORSE FILM DRYER

Removes all water in about 10 minutes by centrifugal motion. No harm to emulsion. No water spots.

Holds 16mm x 50'; 8mm x 25' dbl. or 35mm x 25'. **29.95**

SPECIAL COMBINATION! MORSE G-3 TANK & DRYER (As described above) **45.95**
Total list $93

35mm x 100' SAFETY FILM

Guaranteed till Dec. 1958

Super XX, Plus-X, Panatomic-X, Ansco Supreme, Infrared, Microfile — **1.95 EACH**

Positive (35mm x 100') 1.50
Tri-X (35mm x 100') 3.25

CUT FILM

2¼ x 3¼ Film Packs Plus-X or Super-XX	6 for 5.95
4x5 XF-Pan, Comm'l Ortho Super Pan Port. Super Ortho Press	100 sh. 6.49
8x10 Super Pan Port. Commi Ortho XF Pan	50 sh. 7.49
8x10 Contrast Process Pan and Process Pan	50 sh. 2.99

SPECIAL OFFER! BRAND NEW! DELUXE! FEDCO

Daylight Developing Tank for Cut Film and Film Packs 2¼ x 3¼ to 4 x 5 — Reg. 9.95 — **5.99**

Brand New! 8 x 10 Graflex Holders **3 for 24.99**

Bantam 828 Kodachrome 1956 Date — Outdoor or Indoor — **5 for 4.29** E.K. Proc. Incl.

35mm x 100' Daylight Bulk Loader
- With simplified counter gauge
- 12 empty cartridges
- 35mmx100' Ortho. ASA 64 Film

6.49

9⅜" x 200' AERO ENLARGING PAPER

1, 2, 3, 4 or Varigam

Each roll cuts into 240 Sheets 8x10

4.95 per roll

Case of 20 rolls 92.00

KODACHROME

16mm x 100' "A" 1957. Orig. pkg. **7.49 ea.** 3 for 20.89 E.K. proc. incl.

35mm x 20 exp. Day. 1958 reloads. 3 for 3.49 6 for 6.79

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Guar. till Dec. 1958

5 x 7	SWSM or SWGL	200 sh.	4.69
8 x 10	SWSM	100 sh.	3.69
8 x 10	SWGL	100 sh.	4.39
8 x 10	DWSM	100 sh.	4.99
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10 x 12	DWSM	100 sh.	6.69
11 x 14	SWGL	50 sh.	3.99
9⅜" x 200'	Res. Rapid	1 Roll	4.99
9⅜" x 500'	Res. Rapid	1 Roll	10.99

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Guar. till Dec. 1958

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Size	Type	Contrast	Quan.	Price
2½x3½	Portraya GG	#2	500 sh.	6.99
3x5	DWSM	#2	200 sh.	3.29
8x10	SWGL	#2,3,4,5	100 sh.	4.29
8x10	SWSM	#1,2,3	100 sh.	3.59
8x10	DWSM	#2,3	100 sh.	4.89
8x10	Velour Black	#2	100 sh.	4.99
8x10	Brov. Velv. SW	#1	100 sh.	2.79
8x10	DWGL	#2,3,4	100 sh.	4.89
8x10	Portraya GG	#2	100 sh.	7.29
11x14	SWGL	#2,3	50 sh.	3.69
11x14	DWGL	#1,2,3	50 sh.	4.49
11x14	Portraya GG	#2	50 sh.	5.49
40"x30'	SWGL	#1	1 Roll	3.99
40"x30'	DWSM	#5	1 Roll	4.99
9⅜"x200'	Res. Rapid	#1,2,3,4	1 Roll	4.99

CONTACT PAPER

Guar. till Dec. 1958

KODAK • HALOID • ANSCO

Size	Type	Contrast	Quan.	Price
4x5	SWGL	#3,4,5	300 sh.	2.69
5x7	SWGL	#1, 2	200 sh.	3.19
8x10	SWSM	#1,2,3,4	200 sh.	3.69
8x10	DWSM	#1,2,3,4	100 sh.	2.69
8x10	SWGL	#0,1,2	100 sh.	2.89
8x10	Ad Type	#3,4	250 sh.	3.29
8x10½	Reflex Copy		200 sh.	2.99
8½x11	Kodagraph		500 sh.	5.99
10x10	Document	#2,3,4	144 sh.	1.59
10x10	Resisto	#2,3	250 sh.	3.19
11x14	SWGL	#0,1,2,3	50 sh.	2.99
11x14	Ad Type	#3,4	100 sh.	3.99
10x20	Resisto	#1,2,3,4	100 sh.	3.29
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1½"x200'	Dir. Pos.		2 Rolls	2.49
2¼"x200'	Dir. Pos.		2 Rolls	3.49
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8x10 Enlarging Paper

1958 Date. No. 1 SWGL or Resisto Rapid

200 sheets, 5.99

35mm Bell & Howell

Model #71 Eyemo 3-Lens Turret Outfit With 4 lenses: 25mm f2.3; 50.8 mm f2.8; 100mm f2.9 & 152.4mm f4.5. 3 objective lenses: 2", 4", 8". Two 400' Magazines. Orig cost $2,000. **$395.**

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5¼"x20' Super XX, Infrared, 1955	1.50
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With 6¾" f/4.5 lens. Rapid sequence action on 4x5 negative. Trigger shutter release. To 1/500th sec. Manual operation. Government cost over $800. Fully guaranteed. Free with Camera: 6 rolls of 5¼"x20' Super XX, 2 filters and carrying case for camera.

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General Electric Projection Lamps

T-12 • 750 Watt In original carton.

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3 stainless steel tanks, reel assembly, self reversing. Motor operates on 110 Volts A.C. Film capacity: up to 9½" wide, 200' long. Gov't. cost $585. only **159.99**

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100 ASA Daylight • 1958 originals

35mm x 20 exp. **3 for 5.99**
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In original mfrs. packages • 1958 Date

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8mm x 25' roll	3 for 5.99	
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As low as **49.50** with your Leica IIIF in trade

- Internal automatic diaphragm lens control
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As low as **29.50** with your Contaflex in trade

- Internal automatic diaphragm lens control
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Alpa 7	up to $250.00	Kodak 35	up to 40.00
Ansco Karomat	up to 90.00	Konica III	up to 100.00
Argus C3	up to 45.00	Leica IIIC	up to 100.00
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Exa	up to 70.00	Ciroflex	up to 45.00
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Exakta VX	up to 220.00	Auto Rolleiflex, 3.5	up to 140.00
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135mm f6.5 Schacht Travenar, trigger release, p.s.	93.00
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135mm f4.5 Schacht Travegon	53.00
135mm f4.5 Steinheil Culminar	69.50
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FREE All lenses and accessories on your old camera exchanged for equal quality lenses at no charge. FREE

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49.95

With F2.9 ctd. Lens

Factory Guaranteed complete with Import Certificate & Registration Card.

New Single Flash Post Model

With Automatic F2.8 Westenar	79.50
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Eveready Case Reg. 12.50 | B C Flashgun Reg. 15.50 | Both For **13.75**

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COMPLETE OUTFIT

now 159.50 Regular $413.20

HERE'S WHAT YOU GET!

- Automatic Pentacon
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- Prismatic Viewfinder
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FREE! BRAND NEW PHOTO ELECTRIC EXPOSURE METER

50mm F2 Automatic Westagon or 58mm F2 Preset Biotar PS instead of Westenar, add $19.50

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REG. 409.00

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- 1957 Retina IIIC
- 50mm F2 normal lens
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- 35-80 Optical Finder
- 3 Lens Shades
- B.C. Flashgun
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Exakta VX

With F2.9 Ctd. Lens

With genuine Ihagee W.L. Finder

now 127.50

With F2.8 Auto Westenar	139.50
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With F2.8 Automatic Tessar	169.50
With F2 Automatic Biotar	199.50
With F1.9 Automatic Xenon	204.50

Eveready Case Reg. 12.50 | BC Flashgun Reg. 15.00 | BOTH FOR **$14.95**

Automatic Exakta VX SINGLE FLASH POST MODEL. Instead of disc. model ADD **34.50**

Exa mx

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59.95 Reg. 119.50

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Latest 1957 Exa instead of Disc. Model! Add 12.50

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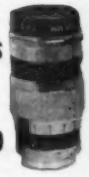
135mm F2.8 Pre-Set LENS

FOR EXAKTA, EXA, PENTACON, CONTAX S & D, PRAKTICA



REG. 89.95

now 47.50

DeLuxe plush-lined case 6.50

SPECIAL $20 allowance for any lens in trade against above

	Reg.	Spec.
135mm f3.5 pre-set	$69.95	$34.50

- Top Quality, high speed lens
- True telephoto; extremely sharp
- Highly color corrected
- Hard coated on all surfaces
- New chrome and anodized mount

	Reg.	Spec.
135mm f4.5 for Argus C-3	$49.95	$34.50

JUST ARRIVED! NEW 1958 NIKON SP

NIKON S2 AND ANY CAMERA ACCEPTED IN TRADE FOR THE NEW NIKON SP

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2¼ x 2¼ single lens reflex camera

68.50

COMPLETE WITH f3.5 p.s. Lens

Reg. 99.50

- Interchangeable lenses
- Speeds to 1/500 sec.
- MX flash synchronized
- Automatic film transport

BRAND NEW LATEST

Aires IIIL

69.50

NO TRADE NEEDED

- F1.9 Ultra Speed Lens
- Speeds 1/2-1/500 Sec.
- New LVS Shutter.

Deluxe case & B.C. folding flash $16.95

Brand new genuine Ihagee Penta-Prism

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For Exakta and Exa cameras. With rangefinder glass and leather case.

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Rangefinder Insert Alone $8.75

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100′ 16mm B&W.....$1.25
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Available in ANSCO TUNGSTEN 35mmx100′ $22.00
Available in TUNGSTEN or DAYLIGHT AERO EKTACHROME—DAYLIGHT SPEED—100 ASA 20 exp. rolls, including processing. $1.50 (3 for $4.25)
20 exp. rolls INDOOR ANSCO COLOR $1.00 (3 for $2.75)
AERO EKTACHROME CHEMICALS—1½ gal.....$2.95
50 ft. 35mm—85¢ Plus X or XX

A **$100.00** purchase of film (color or B&W) will allow a brand new Eastman Kodak Brownie 8mm for **$1.00**—Regular price for such a camera alone—**$35.00**

This offer is in addition to our Unbelievable Value of film on which you save **50%**.

A **$200.00** purchase will entitle you to a Kodak Brownie camera and a 8mm projector for **$1.00.** Regular price close to **$100.00**

A **$50.00** purchase will entitle you to a brand new Brownie Camera with flash and film and bulbs for **$1.00.** Regular price for Camera and film (color as well as B&W) **$25.00**—in any store.

A **$25.00** purchase entitles you to a 127 Camera and 3 rolls of color film and 6 rolls of black and white for **$1.00.** Real value in store —**$10.00**

Additional **$25** purchase entitles you to Eastman Kodak carrying case of genuine leather. Reg. price of case alone—**$11.25**

35mm BLACK & WHITE BULK

ANSCO FINOPAN **$1.25** (Weston 24) Kodak Loader **FREE** regular price **$5.00**
If you buy $25.00 worth of film—one 35mm
Plus X or Double X.....$1.40
Background X and Infrared.....$1.40

ACCESSORIES

FILM DRIERS—good for paper and films **only $1.50**
CHEMICAL KITS—D88, one gallon size good for reversal or straight B&W processing—for paper & film. In powder form.....$1.25 (Include postage)

Take advantage of these bargains.

B&W film—100 ft. on Bolex Spool, proc. incl.....$3.00
100 ft. Ansco Color on Bolex spool 8mm 5.50
With devel. 6.50
Empty 16mm magazines made by Kodak .75
8mm empty mag. ..... .75
16mm 100 ft. camera reels..... .25
Cans for such reels..... .10
Empty cartridges for 35mm 20 or 36 exp. 10¢ each, **$1.00** a dozen
Cans for 35mm cart..... .10
800 ft. reels, 16mm..... .75
16mm—1200 ft.....$1.00, Cans— .50
1600 ft.—16mm.....$1.25, Cans— .50
Kodachrome reloads—20 exp. $1.10
100 ft. $30.00
Special offer Ansco 10 exp. ..... .45
400′—8mm empty reels..... .50
Dble. cans ..... .35
3 for $1.00
Bottle of Cement for all purposes.....35
35mm Bulk film Loader Daylite—100 ft. Negative 35mm film, Plus X or XX 12 cartridges.....All this for **$5.95**
BULK FILM LOADER, plus 2 100 ft. PLUS X 35mm film, 12 cartridges—package price **$6.80.**

PHOTOGRAPHIC ENLARGING PAPER

5x7 SW SM.....1.59
4x5 Varigam SW SM.....1.29
8x10 DW SM Contrast #2 100 sheets....4.35

ANSCO COLOR IN BULK

16mm—4¢ per ft. .....min. order 50 ft.
8mm—25 ft. on camera spools.....$1.25
100′ 8mm $5.00
(Processing not included)

CLEARANCE SALE

16mm. CARTOONS APPROX. 400′ AVAILABLE IN SOUND OR SILENT

For Home Use Only $4.95

8mm. Approx. 200′ $3.50

FRESH WITHIN DATE ANSCO COLOR FILM WITH PROCESSING

8mm 25′ dbl. roll.....$2.25
8mm 25′ dbl. mag..... 2.75
16mm 100′ available in both sound or silent 5.00
16mm 50′ magazine..... 3.50

ANSCO MOVIE FILM BLACK AND WHITE WITH PROCESSING

8mm 25′ dbl. roll.....$1.15
8mm 25′ dbl. mag..... 1.75
16mm 100′ available in both sound or silent 2.50
16mm 50′ magazine..... 1.90
35mm 20 exp. Kodachrome, 1957 dating. 1.10
8mm 25 ft. double High Speed, B&W Eastman Kodak Weston 250—dev. free by E K..... 1.75
16mm 50 ft. B&W Eastman Kodak—dev. free by E K..... 2.00
16mm 100 ft. B&W Eastman Kodak available in Super X and Super XX —dev. free by E K..... 4.00
Roscoe Cement—(bottle)..... .50

SPECIAL OFFERING IN 8mm AND 16mm COLOR SUBJECTS

(CARTOONS AND FAIRY STORIES) COLOR

50 ft. 8mm.....$2.00
200 ft. 8mm..... 7.50
100 ft. 16mm..... 5.00
400 ft. 16mm (silent) 20.00
400 ft. 16mm (sound) 25.00

SPECIAL OFFERING IN 8mm AND 16mm SUBJECTS

(CARTOONS AND FAIRY STORIES) BLACK AND WHITE

50 ft. 8mm.....$1.00
200 ft. 8mm..... 3.50
100 ft. 16mm..... 2.00
400 ft. 16mm (silent)..... 7.50
400 ft. 16mm (sound) 10.00

ANSCOCHROME ASA 32

Available in 8mm and 16mm

100 ft. 16mm roll.....$7.00
50 ft. 16mm Magazine..... 4.50
8mm 25 ft. double roll 3.00
8mm 25 ft. double Magazine..... 3.50
With Processing

MOVIE FILM SPECIAL

100′ 8mm double
Packed on 4 Camera spools 25′.....$1.79
processing not included

ROLL FILM

#127, 120, 620, 116, 616
Black & White, 10 for.....$1.95
35mm 20 exp. Black & White.....25¢
35mm 36 exp. Black & White.....49¢
AERO EKTACHROME #120 and #620
Weston 40.....3 for $2.15
AERO EKTACHROME 20 exp. $1.00

BULK MOVIE FILM

ASA 50
8mm x 400′ dble. .....$ 5.95
8mm x 1600′ dble. 22.00

CAMERA SPOOLED NO PROCESSING

8mm x 100′ dble. $1.79
8mm x 25′ dble. 7 for price of 6!...60¢ each

SIZE	54 rolls	27 rolls	15 rolls
16mm x 25′...	$ 8.95	$ 4.95	$ 2.75
16mm x 50′...	19.95	10.95	5.95
*16mm x 100′..	49.50	29.50	17.95

*Camera spooled

SOUND MACHINE

Bell and Howell, Victor and Ampro our price $149.00

AVAILABLE IN 8mm and 16mm

THE FOLLOWING FULL VERSION REELS

The 8mm is approximately 200 ft. and 16mm approx. 400 ft. each reel.

Charlie Chaplin Comedies—1 reelers—

NEW JANITOR! MABEL'S BUSY DAY, FILM JOHNNY, BETWEEN SHOWERS, CAUGHT IN THE RAIN, HIS NEW PROFESSION.—**2 reelers**—IN THE BAND, NITE AT THE SHOW, THE CHAMPION, THE TRAMP, HIS NIGHT OUT, DOUGH AND DYNAMITE. The price for silent is **$10.00** per reel and for sound **$12.50** per reel. 8mm **$5.00** per reel.

MACK SENNETT BATHING BEAUTIES—

one-reelers **$10.00** per reel and **$20.00** for two-reelers. Full version approx. 400 ft. 16mm each. 8mm **$5.00** per reel.

GRANTLAND RICE SPORTS—

available in 8mm approx. 200 ft. each and 400 ft. approx. Price 16mm **$10.00** silent and **$12.50** sound. 8mm **$5.00** per reel. RUNNING THE SCALES, SPORT AFLOAT? GRIDIRON GLORY, BULLS EYE, SUN AND SNOW, SELF DEFENSE, MONARCHS OF THE FIELD, SON OF SWAT.

HAL ROACH COMEDIES—

Snub Pollard & other famous stars, full version—available in 8mm approx. 200 ft. **$5.00** per reel—16mm **$10.00** silent per reel and **$12.50** sound. Approx. 400 ft.

ORIGINAL OUR GANG COMEDIES—

available in 8mm and 16mm **$5.00** for 8mm approx. 200 ft. **$10.00** per reel for 16mm silent approx. 400 ft. per reel—available in 1 and two reelers.

16mm KODACHROME

100 ft. rolls—processing included. Slightly outdated. Developed by Eastman Kodak. Reg. $10.00. Price **$6.00** per roll.

16mm 50 ft. MAGAZINE KODACHROME DEVELOPED BY EASTMAN KODAK FREE (Slightly outdated) REGULAR PRICE **$7.50**, our price is **$4.50.**

ENLARGING PAPER SPECIAL
100 Sheet Packages

	S.W.	D.W.
4 x 5.....	$1.29	$1.59
5 x 7.....	1.59	2.09
8 x 10.....	3.45	4.00

VISIT OUR STORE
OPEN EVENINGS UNTIL 7
OPEN SATURDAYS
PLEASE INCLUDE POSTAGE

*Refer to opposite page for WHOLESALE

ASTRA PHOTO PRODUCTS

243 WEST 55th STREET
NEW YORK 19, N. Y.

* WHOLESALE ONLY!

BUY IN BULK AND *SAVE!*

**NOTE: Any order less than 1 doz. not considered wholesale.*

FRESH WITHIN DATE ANSCO COLOR FILM
With Processing

8mm 25′ dbl. roll	1 doz.	$24.00
8mm 25′ dbl. mag	1 doz.	30.00
16mm 100′ available in both sound or silent	1 doz.	55.00
16mm 50′ magazine	1 doz.	35.00

ANSCO MOVIE FILM
BLACK AND WHITE
With Processing

8mm 25′ dbl. roll	1 doz.	$12.00
8mm 25′ dbl. mag	1 doz.	20.00
16mm 100′ available in both sound or silent	1 doz.	25.00
16mm 50′ magazine	1 doz.	20.00

ROLL FILM

#127, 120, 620, 116, 616 Black and White	50 for	$ 9.50
120 & 620 Color	1 doz.	7.80
35mm 20 exp. Black & White	1 doz.	2.75
35mm 36 exp. Black & White	1 doz.	5.00
AERO EKTACHROME #120 and #620 Weston 80	1 doz.	8.00
Ansco Color or Ektachrome 20 exp.	1 doz.	10.00
Super X or Double X and Plus X	1000 ft.	12.00

ANSCO COLOR IN BULK

16mm	400 ft.	$15.00
8mm 25 ft. on camera spools	1 doz.	14.00
8mm 100 ft.	1 doz.	42.00

(Processing not included.)

SPECIAL OFFERING IN 8mm and 16mm COLOR SUBJECTS
(CARTOONS & FAIRY STORIES) COLOR

50 ft. 8mm	1 doz.	$ 20.00
200 ft. 8mm	1 doz.	75.00
100 ft. 16mm	1 doz.	80.00
400 ft. 16mm (silent)	1 doz.	200.00
400 ft. 16mm (sound)	1 doz.	250.00

SPECIAL OFFERING IN 8mm and 16mm SUBJECTS
(CARTOONS & FAIRY STORIES) BLACK AND WHITE

50 ft. 8mm	1 doz.	$ 10.00
200 ft. 8mm	1 doz.	35.00
100 ft. 16mm	1 doz.	20.00
400 ft. 16mm (silent)	1 doz.	75.00
400 ft. 16mm (sound)	1 doz.	100.00

BULK MOVIE FILM

8mm x 25 ft. dble. (Packed on Camera Spool.) 1 doz. $5.00

No Processing

16mm x 50′	100 rolls	$40.00
16mm x 100′	50 rolls	45.00

WHY NOT HAVE YOUR OWN FILM LIBRARY? You can secure from us new cartoons of DISNEY and other makes—full version—200′ 8mm and 16mm 400′ available in 12 assorted subjects for the following prices . . .

8mm 200′—12 subj. for	$ 35.00	$100.00
16mm 400′—12 subj. for	100.00	250.00

BUY AND CONVINCE YOURSELF ! ! ! !

HAL ROACH COMEDIES
(12 Ass't)

8mm subjects 200′	$ 35.00	$100.00
16mm subjects 400′	100.00	250.00

CHARLIE CHAPLINS
(12)

8mm	$ 35.00	$100.00
16mm	100.00	250.00

IN THE BANK—2 reels
NIGHT AT THE SHOW—2 reels
THE TRAMP—2 reels
THE CHAMPION—2 reels
THE NEW JANITOR—1 reel
FILM JOHNNY—1 reel
BY THE SEA—1 reel
IN THE PARK—1 reel

MACK SENNETT COMEDIES
(12)

8mm 200′	$ 35.00	$100.00
16mm 400′	100.00	250.00

"OUR GANG" COMEDIES
(12)

8mm 200′	$ 35.00	$100.00
16mm 400′	100.00	250.00

GRANTLAND RICE SPORT REELS
(12)

8mm 200′	$ 35.00	$100.00
16mm 400′	100.00	250.00

RUNNING THE SCALES
GRIDIRON GLORY
STAMINA
BODY BUILDERS
CLOWNING THE GAME
SONS OF SWAT
MONARCHS OF THE FIELD
SELF-DEFENSE
CHAMPION MAKERS
HOOKED
FELINE FIGHTERS
SPORTS AFLOAT

PRIZE FIGHTS
(12)

8mm 200′	$ 35.00	$100.00
16mm 400′	100.00	250.00

LOUIS—BAER
LOUIS—SCHMELING
LOUIS—ROPER
LOUIS—WILSON
SCHMELING—LOUIS
SCHMELING—WALKER
SCHMELING—STRIBLING
SHARKEY—WALKER
SHARKEY—STRIBLING
DEMPSEY—SHARKEY
PETROLLE—BATTALINA
CONZONERI—PETROLLE

•ALSO AVAILABLE ARE (12) ASSORTED FEATURES AT BARGAIN PRICES

These features consist of 5, 6 and 7 reels. Running time over one hour.

	OUR PRICE	REG. PRICE
12-8mm ass't feat.	$275.00	$ 550.00
12-16mm ass't feat. (silent or sound)	550.00	1200.00

IMPORTANT ! ! !

When ordering please state whether you want silent or sound features in 16mm. The following are titles of features available.

STAR

DANCING MOTHERS	—Clara Bow
WE'RE IN THE NAVY NOW	—Wallace Beery
LADY WINDERMERE'S FAN	—Ronald Colman
YANKEE CLIPPER	—William Boyd
NIGHTCRY	—Rin Tin Tin
LOST WORLD	—Wallace Beery
COVERED WAGON	—Helen Hale
LEATHERNECKS	—William Boyd
LAST OF THE MOHICANS	—All Star Cast
CAPTAIN FLY-BY-NIGHT	—Johnny Walker
YOUNG APRIL	—Joseph Schildkraut
CAPTAIN SWAGGER	—Rod La Roque

ACCESSORIES
TAKE ADVANTAGE OF THESE BARGAINS

B & W film—100 ft. on Bolex Spool	1 doz.	$43.00
100 ft. Ansco Color on Bolex Spool 8mm	1 doz.	60.00

With Developing

Empty 16mm magazines made by Kodak	1 doz.	8.00
8mm Empty mag.	1 doz.	8.00
16mm 100 ft. Camera Reels	1 doz.	2.50
Cans for such reels	1 doz.	1.00
Empty cartridges for 35mm 20 or 36 exp.	1 doz.	1.00
Cans for 35mm cart	1 doz.	1.00
200 ft. 8mm	1 doz.	3.00
200 ft. 8mm cans	1 doz.	3.00
400′—8mm empty reels	1 doz.	5.00
Dble. cans	1 doz.	3.00
8mm camera reels	1 doz.	2.50
Cans for 25 ft. double	1 doz.	1.00
400′ reels 16mm	1 doz.	3.00
Cans for 16mm 400′	1 doz.	3.00
800′ reels 16mm	1 doz.	7.50
Cans (double)	1 doz.	3.50
16mm—1200 ft.	1 doz.	10.50
Cans	1 doz.	5.50
1600 ft.—16mm	1 doz.	14.00
Cans	1 doz.	5.50

SPECIAL OFFER

Ansco 10 exposures color, 35mm	1 doz.	$5.00

MOVIE FILM SPECIAL

100′ 8mm double	1 doz.	$20.00
Packed on 4 Camera Spools 25′	1 doz.	5.00

SPECIAL OFFERING RELIGIOUS SUBJECTS
Available in 8mm and 16mm

	OUR PRICE	REG. PRICE
LIFE OF CHRIST 7 reels 8mm	$ 5.00 per reel	$10.00
CROWN OF THORNS 8 reels (sil.) 16mm	10.00 per reel	15.00
ST. FRANCIS 7 reels (sound) 16mm	12.50 per reel	20.00

ST. ANTHONY OF PADUA—9 reels
MESSENGER OF THE BLESSED VIRGIN 9 reels (Story of the Lourdes)
JOAN OF ARC—5 reels
THE CHRISTUS—7 reels
(All 16mm films which are approx. 400 ft. per reel can be obtained in sound or silent. The 8mm is approx. 200 ft. per reel.)

PLEASE INCLUDE POSTAGE

VISIT OUR STORE OPEN EVENINGS UNTIL 7 OPEN SATURDAYS

ASTRA PHOTO PRODUCTS

243 WEST 55th STREET NEW YORK 19, N. Y.

AWON PHOTOGRAPHIC DISCOUNTS !!!

SAVE BY MAIL ! !

Our Reputation is your assurance.

FRESH COLOR FILM

This 1958 dated film is in its original sealed package fully guaranteed by the manufacturer. Day. or Tung. Price includes processing & mounting (35mm). MINIMUM ORDER—3 ROLLS.

Size	Kodachrome
8mm x 25' dble. roll	$2.65
8mm x 25' dble. mag.	3.50
16mm x 50' mag.	5.25
16mm x 100' roll	7.75
35mm x 20 exp.	2.45
35mm x 36 exp.	3.80

Slide Tray SPECIAL

12 Viewlex or TDC slide trays (hold 36 slides each) $5.95
12 Airequipt slide trays (hold 36 slides each) $16.95

Special Sale! CASES

for 12 Slide Trays

Dust-proof protection for your color slides. Holds up to 12 2x2" TDC Viewlex or Airequipt Trays.. $4.95
CASE for 24 TRAYS $7.95

Black & White Movie Film Processing

8mm x 25' dble.	$ .55 ea.
16mm x 100'	1.00 ea.
16mm x 50'	.65 ea.

AERIAL FILM

KODAK XX

3¼"x20'	.79
5½"x36'	1.20
7"x18'	1.00
9½"x75'	7.95
9½"x200'	14.95

KODAK TRI-X

5"x250'	6.95
5½"x 36'	1.20
9½"x 75'	7.95
9½"x200'	14.95

MOVIE FILM

Fast, fine grain B & W panchromatic ASA 50. Prices include new fast processing service.

8mm x 25' dble roll	$1.10
8mm x 100' Bolex dble	3.50
16mm x 50' mag	1.75
16mm x 100'roll Ansco	2.75
16mm x 100' XX ASA 100	2.95
16mm x 100' Kodak Plus X	2.95
16mm x 50' roll. Plus X	1.65
16mm x 50' mag. X or XX	2.25

BUY SIX . . . GET ONE EXTRA FREE

Bulk Film Special

- BRAND NEW DAYLIGHT FILM LOADER
- FRESH DATED 35mm NEGATIVE FILM
- 5 FILM CARTRIDGES

All for only $5.95

ANSCOCOLOR

1956 Date—Day. or Tung.

35mm x 100'	$18.95
35mm x 50'	9.95
35mm x 27½'	6.95
35mm x 20 exp. in metal cart. ea.	1.20
6 for $5.50; 12 for	10.00
35mm x 50' Tung.	6.00

16mm x 400' BULK KODAK

ASA 24—Sngl. or Dble. Perf.	$6.95
Super XX (ASA 100)—Dble. Perf.	7.95

Lantern Slide Plates

36 per box—3¼x4" or 2x2" ..... 2 boxes for $1
11x14—6 per box $1.50

AERO EKTACHROME

ASA 40, with 1½ gallon processing kit.

5¼ x 20'	$5.95
7 x 18'	5.95
5¼ x 40'	8.95
35mm x 37½'	5.95

FREE Compensating Filter with any of above!

NEW EXPOSURE METERS

Reg.	SPEC.
$ 9.95—Alpex Direct Reading w/case	$ 5.95
8.95—Sekonic Leader DeLuxe, w/case	6.50
Booster Cell for Sekonic Leader	2.95
9.95—Compack, w/case	6.95
32.50—Norwood Director M-2	23.95
26.95—DeJur Dual—Professional	17.95
26.50—GE DW-68	17.95
32.50—GE PR-1 w/case	19.95
16.96—GE Mascot w/case	11.95
32.50—Weston Meter III w/case (dem)	22.45
33.45—Weston Master II w/case	18.95
34.50—GE Guardian w/case	23.50
18.00—Weston DR, Dir. Read. w/case	12.95
Case for any of above	1.95

SPECIAL SALE!

POLAROID FILM

Type 31 (Model 80)	6 rolls for $7.00
Type 32 (Model 80)	6 rolls for 8.00
Type 41 (Model 95A, 700, 110)	6 rolls for 9.00
Type 44 (Model 95A, 700, 110)	6 rolls for 10.95

DARKROOM ACCESSORIES

BRAND NEW

	List	Sale
Yankee Lordomat 20 Tank	$10.95	$ 7.28
Yankee 4x5 Utility Tank	2.95	2.10
Yankee 4x5 Agitank cut film	8.95	6.95
Yankee Safe lite w/3 Filters	4.95	3.89
Airequipt 4 Way Fixed Easel	8.07	5.65
Airequipt Diaimaster Easel 11x14	17.06	11.89
Airequipt Jr. Printer 4x5	10.77	7.55
Brumberger 8x7 Adj. Metal Printer	22.00	14.95
Brumberger 5x7 Safe Lite OA	5.95	4.35
Brumberger 8x10 Paper Safe	10.95	7.80
Fedco Focus Rite Enlarging Aid	2.25	1.75
Fedco No. 100 Dryer 11¼x15	9.95	6.75
Gra Lab #168 Luminous Timer	24.95	17.20
Premier A2 Roto Dryer 24x28"	49.95	33.89
Premier A1 Roto Dryer 12x29"	27.50	18.92
Staticmaster 1" Brush	4.95	3.50
Spot-O-Matic Enlarging Meter	15.00	10.97
Morse G3 35.8 16mm Dev. Tank	34.00	26.72
Precise 11x14 Metal Adj. Easel	6.75	4.95
Carr Cut Film Hangers 4x5	.99	.69
BFI Chemicals 7 Minute Processing Kit	23.75	19.50

Fresh ASA 50 Aero Ektachrome

35mm x 20 exp, $1.50 ea; 4 for $5; Process included.
38mm x 40' Bulk $5.00; 35mm x 75' Bulk $7.50
35mm x 75' Bulk plus 4½ gal. devel kit $10

NEW—SUPER HIGH SPEED—1958 DATE

ANSCOCHROME ASA 100+

35mm x 20 exp.—list $2.35—SALE 3 for $5.98
120 roll—list $1.75—AWON SALE 3 for $4.50

ANSCOCHROME 1958 ASA 32

35mm x 100' (orig. factory pack)	$30.00
35mm x 28' (orig. factory pack) w/loader	7.99
35mm x 20 exp. $1.35 ea.	4 for 4.98
120 or 620	3 for 3.00
8mm x 100' dble (no proc.)	3 for 19.95
16mm x 100' (no proc.)	5.95
16mm x 100' roll (incl. proc.) $8.25	3 for 24.00
16mm x 50' mag. (incl. proc.) $5.40	3 for 15.60

AWON Bulk Film Special!

35mm x 100' Kodak TRI-X	$3.50
35mm x 100' B&W ASA 24	.98
35mm x 100' Kodak Ortho Pos film	1.50
35mm x 100' Ansco ASA 50	1.50
16mm x 400' Positive Film	3.95
35mm x 100' Kodak Super XX	1.50

MOVIE—QUANTITY DISCOUNTS

B&W ASA 50. SIZE	Reversal. 54 Rolls	27 Rolls	No Processing 15 Rolls
16mm x 50'	$19.95	$10.95	$ 5.95
*16mm x 100'	46.95	28.50	15.95

*Camera Spooled.

BELL & HOWELL Sale

ALL BRAND NEW—ALL LATEST MODELS

NEW ELECTRIC EYE

B&H AUTOMATIC Movie Cameras—f1.9 LENS SETS ITSELF

Just introduced. Miracle movie cameras set lens stops automatically. AWON CUTS PRICES on the very first shipment. Order Now!

8mm—#290—list $169.95	AWON SALE	$125
16mm—#240 EE—list $329.95	AWON SALE	$240

8mm MOVIE CAMERAS—roll film

	List	AWON Price
Wilshire #220, f2.5 lens	$39.95	$25.95
Monterey #252, f2.3 lens	49.95	36.95
Companion #134W, f2.5 lens	89.95	64.95
Sportster #134V, f1.9 foc mt	129.95	89.95
Auto—8 Voyager #172R, f2.5	134.95	94.95
Auto—8 Explorer 172A 1.9 foc	199.95	138.50
Monterey DeLuxe 252B, f1.9	59.95	42.00

16mm MOVIE CAMERAS—MAG.

Electric Eye 200EE f1.9 foc	299.95	224.95
Case for above	30.00	21.45
AutoMaster 200TA turret f1.9	289.95	224.95

8mm PROJECTORS

Monterey #253A 500 watt	69.95	49.95
Monterey #253AX 500 watt	84.95	59.95
Super Monterey #253RX 500 watt	99.95	69.95
Monterey De Luxe #253RY 500 watt	114.95	81.50
Regent #122LC 500 watt	159.95	112.95
Regent De Luxe #122LR	179.95	127.95
Regent De Luxe #122LRY	194.95	139.95

16mm PROJECTORS

Statesman #273 700 watt	199.95	142.95
FilmoSound 385C 1000 w	479.95	346.95

SLIDE PROJECTORS

Robomatic, all auto., w/case	149.50	106.00
Headliner #303 w/case	59.50	42.95
Headliner #303 w/remote control & case	83.00	66.50
TDC #D w/airflow case	79.50	55.45
Streamliner 500 wt w/case	89.50	66.50
Streamliner Duo 500 wt for 2x2 & 2¼ sq	84.50	62.95

Brand New! Famous Make

ELECTRONIC FLASH

- Needs only 4 small batteries
- Exposure calculator dial
- Hand-Grip head for "off-the-camera" shots
- Switches easily to AC power
- GE flash tube gives consistent exposure
- Comes with camera bracket and AC line cord

List price $54.50 AWON SPECIAL $29.95

ELECTRONIC FLASH OUTFITS

BRAND NEW	Reg.	AWON PRICE
Ultrablitz Jet, A.C. or Batt.	$70.00	$41.95
Ultrablitz Expert IV, A.C. & Batt.	69.50	39.95
Ultrablitz Matador 15	99.95	56.95
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KODAK STEREO camera	89.50	67.50
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KODAK DUAFLEX IV outfit	25.25	18.95
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KODAK PONY 135 model C, outfit	49.95	36.95
KODAK SIGNET 40, 35mm w./flash	69.00	49.95

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KODAK BROWNIE 8mm model II, f2.3	39.75	29.50
KODAK BROWNIE 8mm model II, f1.9	49.75	37.30
KODAK BROWNIE turret 8mm f1.9	84.75	63.60
KODAK MEDALLION 8mm mag. f1.9 foc	144.50	95.80
KODAK K100 16mm f1.9 lens	299.00	224.25
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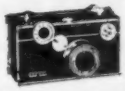

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New Books

FORM AND FIGURE, by Peter Basch. Published by Amphoto, 33 West 60th Street, New York, N. Y. 112 pages, $5.95.

It is usually necessary to discount heavily the text in a book of figure studies if only because this is a subject which seems to bring out the most confused defenses and rationalizations on the part of photographer, editor, and publisher. Mr. Basch's notions about his pictures are particularly at variance with his achievements as a photographer of the nude. Granted that these achievements include some straightforward studio shots which at their best manage to be pleasing. But what are we to make of the prurient distortions, "angles," and poses which fill the remainder of his book? Hardly worthy of comment, one might reply, if they were simply presented for what they are (or, at least, without apology). Yet Mr. Basch, from a lofty vantage, seems to feel that they are far superior to the work seen in the figure-cheesecake magazines now flooding the market. Indeed, he severely dissociates his efforts from those of photographers whose nude studies imply, he writes, "an aggressiveness and lack of inhibitions on the part of the female that is in conflict with the upbringing of the young women of our culture." This may be a relevant moral position which may be based on an acute social observation. (We happen to think it is neither.) But this reviewer suggests that Mr. Basch take a good look at his own pictures before assuming such a righteous tone.—*Byron Dobell*

What's New *(Continued from page 40)*

at $3. A ready guide to chemicals, their selection, and use, **Ilford Formulae & Packed Chemicals,** is priced at 50 cents. **Ilford Color Filters** is a 60-page book and is priced at $1. **Photography as an Aid to Scientific Work** (covering Micrography, Radiography, Photomicrography, etc.), is priced at $1. **Document Copying with Ilford Materials** gives an account of the company's materials in photographic reproduction. Price is 75 cents. All books are available from Ilford dealers.

MISCELLANEOUS

SWIVL-CLAMP MAGNIFIER, a +5 diopter with an 8-in. focal length can be used in inspecting negatives, prints, or ground-glass and is large enough to permit viewing with both eyes. An all-position swivel permits one-hand operation. Edmund Scientific Co., Barrington 16, N. J., offers the magnifier for $4.

PHOTO GREETINGS, a 16-page bulletin, describes a variety of photographic greeting card designs available for every holiday of the year and in addition, a method of making prints on china. Write to Chemipure Labs., 89-07 169th St., Jamaica 32, N. Y.

ACCURA FILTER-BANK is a velvet-lined case with sections for 6 filters. It has a snap-button opening and can be attached to a case strap. Prices are $1 each for the Series IV and V size, $1.25 for the Series VI size, and $1.50 for the Series VII model. Distributor is Accura Ind., 150 Broadway, New York.

YOU'VE BEEN MINOX'D mounts are folders for Minox prints with space provided for the photographer's name, place, and date where photo was taken. They are available from Minox Processing Labs., Box 92, Forest Hills 75, N. Y., and are priced at $1 for 25 folders.

FUL-VU MYLAR transparent sleeve protectors are available in two types, both of which fit standard 3-ring binders. Univis sleeves will fit, in addition, Mult-O-Ring, 3-, 6-, or 7-ring 8½x11-in. binders. The binders are moisture resistant and inert to solvents and chemicals. Univis sleeves (Model #UY-11) are priced at $24 per 100; Model RY3-11 are priced at $22 per 100. Samples and literature available from Cook's Inc., Blackwood, N. J.

KODAK DATA BOOK, Storage and Preservation of Motion Picture Film, brings together in 80 pages pertinent information on all phases of the care and storage of processed and unprocessed motion-picture films. It is punched to fit Kodak notebook binders and is available through Kodak dealers at 50 cents per copy.

PREMIER VERSATILE TITLER has been designed to accommodate new 8-mm cameras with lenses of from 10- to 13-mm and 16-mm cameras with 20- to 26-mm lenses. Titler consists of lens holder, auxiliary lens, 8 title cards, and mounting equipment. More information available from Customer Service Dept., Photo Materials Co., 2100 W. Fulton St., Chicago 12.—

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CHICAGO'S Largest Camera Trading Center! Open evenings! Better deals! New-Used! Mailorder satisfaction! Chromoptics, 943 North State, Chicago 10.

CANADIANS send for bargain list, new and used equipment. Simon's Camera Inc., 11 Craig West, Montreal, Canada.

LARGEST Camera discount house in the East. Write in your needs. Dept. PP, "King For Price", Box 163, Bronxville, N. Y.

LENSES. Britain's Best (Govt. surplus). 5" F/4.5 Anastigmat (wide angle) $18.50, 8" F/2.9 Anastigmat Pentac $20.00, 14" Dallmeyer Serrac F/4.5 $33.50, 14" F/5.6 Anastigmat $27.00, 20" F/6.3 Anastigmat $35.50, 36" F/6.3 Telephoto (Big Bertha) $72.00. (Freight inclusive.) All Lenses Guaranteed. Stocks very limited. Orders despatched immediately against Bankers draft or cash. Also Stocklists of Complete Aircraft Cameras (British and American). Details upon request. Direct Photographic Supply Co., 2 Harrow Road, London, W.2, England.

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BUY Surplus Direct From Government at tremendous savings, cameras, developers, projectors, office equipment, jeeps, trucks, boats, tools, machinery. Price $1.00 for Government Surplus Sales, Box PRA 169, East Hartford 8, Conn.

NEW Airequipt Magazines 6 For $8.00, New Argus 300W Automatic Projector $43.90, Argus C-3 Outfit $47.90. Camera Shoppe, Box 601-S, Mt. Vernon, New York.

GET Our Prices First! 6¢ stamps brings new bargain catalog. Imperial, Dept. P1, 34 Park Row, New York 38.

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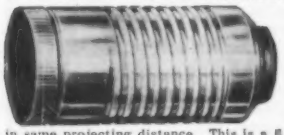

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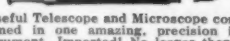

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